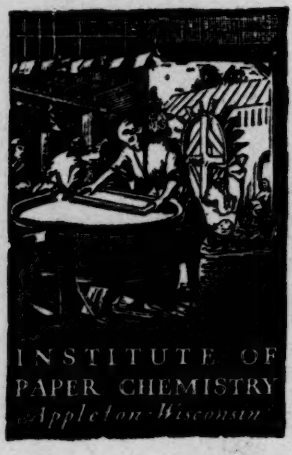
PAGES 475-556

BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

MARCH · 1952

Volume 22 Number 7

THE cut on the cover is a reproduction of the Bookplate of The Institute of Paper Chemistry. The drawing, entitled, "the Papermaker," first appeared in 1698 in the Book of Trade by Christoff Weigel. This particular reproduction has been copied from an illustration appearing on page 43 of Dard Hunter's book "Papermaking Through Eighteen Centuries," published in New York in 1930 by William Edwin Rudge. THE INSTITUTE is greatly indebted to Mr. Hunter for permission to use the illustration.

BULLETIN

of

THE INSTITUTE of PAPER CHEMISTRY

AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

MARCH · 1952

Volume 22 Number 7

LIBRARY NOTES

The Bulletin of The Institute of Paper Chemistry is published monthly at Appleton, Wisconsin, by the Board of Trustees of The Institute of Paper Chemistry. Entered as Second Class matter November 13, 1930, at the postoffice at Appleton, Wis., under the act of August 24, 1912. Printed in U.S.A.

THE INSTITUTE OF PAPER CHEMISTRY

OFFICERS

Ernst Mahler	Chairman of the Board
D. C. Everest	Vice-Chairman of the Board
John L. Riegel	Vice-Chairman of the Board
Westbrook Steele	President
John G. Strange	Vice-President—Treasurer
C. B. Sitterson, Jr.	Secretary
Doris Pickert	Assistant Secretary

BOARD OF TRUSTEES

Nathan M. Pusey, President of Lawrence College, ex officio
Westbrook Steele, President of The Institute of Paper Chemistry, ex officio

For the term expiring in 1952

D. C. Everest, Marathon Corporation, Rothschild, Wis.
David L. Luke, Jr., West Virginia Pulp and Paper Company, New York, N.Y.
Herbert T. Randall, The Champion Paper and Fibre Company, Hamilton, Ohio.
John L. Riegel, Riegel Paper Corporation, New York, N.Y.
George Olmsted, Jr., S. D. Warren Company, Boston, Mass.
Karl E. Stansbury, Thilmany Pulp and Paper Company, Kaukauna, Wis.

For the term expiring in 1953

Dan K. Brown, Neenah Paper Company, Neenah, Wis.
George E. Dyke, Robert Gair Company, New York, N.Y.
Stuart E. Kay, International Paper Company, New York, N.Y.
A. B. Layton, Crown Zellerbach Corporation, San Francisco, Calif.

For the term expiring in 1954

Sydney Ferguson, The Mead Corporation, Dayton, Ohio.
Donald S. Leslie, Hammermill Paper Company, Erie, Pa.
Ernst Mahler, Kimberly-Clark Corporation, Neenah, Wis.
W. Irving Osborne, Jr., Cornell Paperboard Products Company, Chicago, Ill.

STANDING COMMITTEES OF THE TRUSTEES

Executive Committee: Ernst Mahler, Chairman; D. K. Brown, George E. Dyke, David L. Luke, Jr., and Karl E. Stansbury.
Investment Committee: Ernst Mahler, Chairman; D. K. Brown, John G. Strange, and Ralph J. Watts.
Committee on Academic Policy: Nathan M. Pusey, Chairman; Rex Hovey, Harry F. Lewis, Ernst Mahler, John L. Riegel, Westbrook Steele, and John G. Strange.

Books and Periodicals Added to the Library During February

ADHESIVES

AERO RESEARCH LIMITED. Structural adhesives, the theory and practice of gluing with synthetic resins. Lectures given in Cambridge at the summer school "The technology of synthetic resin adhesives," held by Aero Research Limited, Duxford, Cambridge from September 23rd to the 29th, 1951. London, Lange, Maxwell & Springer [1951] 203 p.

ALCOHOL

NEUMAN, JOSEPH. Kritische Studien über Hydrolyse der Cellulose und des Holzes. Dresden, Holze & Pahl, vorm. E. Pierson, 1910. 80 p.

CHEMISTRY—YEARBOOKS

SOCIETY OF CHEMICAL INDUSTRY. Reports on the progress of applied chemistry. London, The Society [1951] v. 35, 1950. 922 p.

ESPARTO

MONTESSUS DE BALLORE, HENRY DE. Alfa et papier d'alfa. Paris, H. Dunod et E. Pinat, 1909. 294 p.

MACHINERY

COMPANY procedural manual on equipment analysis; a manual of policy and procedure for determining economic advantage of new equipment, re-equipment or replacement, and plant expansion. Chicago, William Kelly & Co., 1951. 45 p.

MANOMETRIC TECHNIQUES

UMBREIT, W. W., BURRIS, R. H., and STAUFFER, J. F. Manometric techniques and tissue metabolism. [Rev. ed.] Minneapolis, Burgess Publ. Co. [c1949] 227 p.

MECHANICAL ENGINEERING

MARKS, LIONEL S., ed. Mechanical engineers' handbook. 5th ed. New York, McGraw-Hill Book Co., 1951. 2236 p.

MICROSCOPE AND MICROSCOPY

FREUND, HUGO, ed. Handbuch der Mikroskopie in der Technik. Frankfurt am Main, Umschau Verlag [c1951] Band 5, Teil 1 und 2. Mikroskopie des Holzes und des Papiers. 891 + xlvi pages.

NEWSPRINT

U. S. CONGRESS. HOUSE. *Committee on Interstate and Foreign Commerce. Special Subcommittee on Newsprint and Subjects under House Resolution 116.* Newsprint investigation. Hearings . . . 82d Congress, 1st Session on subjects pursuant to H. Res. 116. Part 1. May 23, 24, June 13, 14, 19, 20, 22, July 27, 30, August 1, September 24, 27, 28, and October 9, 1951. Washington, U. S. Govt. Print. Off., 1951. 549 p.

PAPER MAKING AND TRADE

CASEY, JAMES P. Pulp and paper; chemistry and chemical technology. New York, Interscience Publishers, 1952. v. 1. Pulping and papermaking. 795 p.

KEIM, KARL. Das Papier, seine Herstellung und Verwendung als Werkstoff des Druckers und Papierverarbeiters. Stuttgart, Otto Blersch Verlag, 1951. 350 p.

PAPER MAKING AND TRADE—HISTORY

ADAMS, W. CLAUDE. History of papermaking in the Pacific Northwest. [Reprinted from the Oregon Historical Quarterly, March, June and September issues, 1951] Portland, Binfords & Mort [1951] 67 p.

PETROLEUM

STANDARD OIL COMPANY OF NEW JERSEY, and affiliated companies. Technical publications, 1949. Arman E. Becker, editor. [n. p., The Company, c1951] 563 p.

POLYMERS AND POLYMERIZATION

ALFREY, TURNER, JR., BOHRER, JOHN J., and MARK, H. Copolymerization. New York, Interscience Publishers, 1952. 269 p.

TRADE DIRECTORIES

"BIRKNER" Addressbuch der Papier-Industrie Europas. Darmstadt, Verlag Birkner & Co., 1950. Various paging.

PHILLIPS' Paper trade directory of the world, 1952, with which is incorporated "Phillips' directory of paper makers of Great Britain and Ireland" and "Phillips' paper trade directory of the British Empire." London, S. C. Phillips & Co., c1952. 747 p.

UNITED STATES—ECONOMIC CONDITIONS

LEONTIEF, WASSILY W. The structure of American economy, 1919-1939: an empirical application of equilibrium analysis. New York, Oxford University Press, 1951. 264 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ADHESIVES

THE HUBINGER COMPANY, *Keokuk, Iowa.* New alkaline water-resistant corrugated adhesive. Fibre Containers 37, no. 2: 67-8 (February, 1952); Am. Boxmaker 41, no. 2: 23 (February, 1952).

A new alkaline type of water-resistant adhesive formula has been developed and successfully tested. It has been found to meet the military specification requirements for corrugated V board and has the following advantages over acid-type adhesives: it is compatible with regular, nonwater-resistant starch paste; it can be bonded at higher speeds than acid-type pastes; it is stable in viscosity and nonthixotropic in nature; and its alkaline character makes it noncorrosive to machinery. Formulas for three different quantities are included. M.W.

AERONAUTICS IN FORESTRY

ANON. Amphibious aircraft solves many problems. Pulp Paper Mag. Can. 53, no. 1: 119 (January, 1952).

The "Sealand," an amphibian which has a wide range of utility in forestry operations, is described. 3 illustrations. M.W.

ASSOCIATIONS

AMERICAN PAPER AND PULP ASSOCIATION. Functional organization. Paper Trade J. 134, no. 8: 72, 74, 76, 78-80, 82, 84-6, 88-92 (Feb. 22, 1952).

The structure of the Association is outlined, and photographs of the officers of divisional and affiliated associations and the governing and staff organizations are included. A description is also presented of each of the following divisional associations: Writing Paper Manufacturers, United States Pulp Producers, Waxed Paper Institute, Inc., Paper Shipping Sack Manufacturers, Book Paper Manufacturers, Paper Napkin Assoc., and Specialty Paper and Board Affiliates. M.W.

PAPER TRADE JOURNAL. The convention. Paper Trade J. 134, no. 8: 62-4, 66, 68, 71 (Feb. 22, 1952).

The Paper Trade Journal for August 31, 1878, in which the proceedings of the first meeting of the American Paper and Pulp Association appeared, is reproduced. M.W.

BARK

HERGERT, HERBERT L., and KURTH, E. F. Chemical nature of

the cork from Douglas-fir bark. Tappi 35, no. 2: 59-66 (February, 1952).

The cork from Douglas-fir bark was examined for its chemical nature. The chief extractive components are dihydroquercetin, waxes, tannin, and a carbohydrate substance which on hydrolysis gave glucose and galactose. Extractive-free Douglas-fir cork was found to be composed of two fractions: one, amounting to 82 to 85% of the dry weight, was soluble in alkalies or dioxane-hydrogen chloride reagent, and the other, amounting to about 15% of the dry weight, was thin-walled, cellular material. The composition of each fraction is described. A comparison of Douglas-fir cork with Mediterranean oak cork showed that they are quite similar chemically, with the exception of the higher extractive content of the former and the higher molecular weight of the acids in the latter. The common concept of cellulose-fatty acid linkages in cork was not substantiated by the findings of this investigation. 9 tables, 3 figures, and 18 references. E.S.

BARKERS AND BARKING

DEMOISY, RALPH G. Progress report on chemical debarking in Washington. New Wood-Use Series. Institute of Forest Products Circular no. 19: 4 p. (January, 1952).

Chemical debarking experiments were undertaken in the Pacific Northwest to determine the effects of sodium arsenite treatment on western pulp species. Western hemlock, the true firs, black cottonwood, and western redcedar react most favorably to treatment. Red alder and Douglas-fir tests have shown no separation as yet. The experiments will be continued and will include more species. 2 figures. M.W.

MCINTOSH, D. C. Effects of chemical treatment of pulpwood trees. Canada. Department of Resources and Development. Forestry Branch. Forest Products Laboratories Division. Bull. no. 100: 29 p. (1951); *cf.* B.I.P.C. 18: 817-18.

Chemical treatment of trees for facilitating bark removal and the effects of chemical treatment in reducing the weight and improving the floatability of wood were studied. Results of the tests indicate that peeling which is even easier than sap-peeling can be obtained by applications of soluble arsenic to trees during June and July. Trees treated after the normal peeling season generally showed easy peeling only after a year following treatment. Significant reductions in weight occurred in jack pine, balsam fir, and white spruce, no reductions were found with black spruce, aspen, or balsam poplar, and treated white birch trees were usually heavier than untreated trees. The buoyancy of logs of jack pine and balsam fir was in general substantially improved. 6 tables, 22 figures, and 10 references. M.W.

MCINTOSH, D. C. Studies of the floating properties of pulpwood logs. Canada. Department of Resources and Development. Forestry Branch. Forest Products Division. Mimeograph 0-158: 9 p. (February, 1951).

Tests were made on a limited scale to assess the effect produced on buoyancy of logs by chemical debarking treatment. Logs from chemically treated jack pine and balsam fir showed improved floating qualities because of an appreciable decrease in moisture content. Small logs showed a lower floating margin than large logs after being in the water for two or three weeks. Although chemical treatment seemed to have no effect on broad-

leaved species, buoyancy was found to improve if the logs were seasoned before watering. 12 tables. M.W.

MACMILLAN & BLOEDEL, LTD., *Port Alberni, B.C.* Barker water filters in B.C. Pulp & Paper 26, no. 2: 68 (February, 1952).

A successful application of water filtration facilities before the hydraulic barking pumps has been made at an unbleached sulfate pulp mill. Two automatic poro stone (aluminum oxide) filters which are designed to provide continuous filtration with automatic backwashing of solids have been installed. 2 illustrations. M.W.

PULP & PAPER. A hydraulic barker plant; water filtration is important in process. Pulp & Paper 26, no. 2: 72-3 (February, 1952).

At the hydraulic barking plant of Columbia River Paper Mills, five Nichols Vortraps are used for removing solids from the water before it reaches the multistage barker pumps. After several months' operation there was no indication of wear on the nozzle plate where a full 1300-p.s.i. operating pressure is maintained. In addition to the hydraulic barker, the principal processing units of the plant include a chipper and a band mill for reducing logs to sizes suitable for the chipper. 7 illustrations. M.W.

BEATING

BREĬTVEĬT, K. B. Beater characteristics. Bumazh. Prom. 25, no. 4: 16-18 (July-August, 1950). [In Russian]

A mathematical approach to beater operation is presented, and the following expression is developed for beater capacity (Q_s) per unit time for a given change in pulp freeness: $Q_s = cFv$, where c is a coefficient depending on pulp consistency, effective pressure of the beater roll on the fibers, the number of fibers contacted under the beater-roll bars, and other factors, F is the contact area of the bars, and v is the peripheral speed of the roll. 1 table and 3 figures. E.G.S.

CORTE, HEINZ. The physical significance of the beating degree and its relationship to paper strength. Das Papier 6, no. 1/2: 1-7 (January, 1952). [In German]

Following a brief description of the Schopper-Riegler beating-degree test, the procedure is subjected to a physical analysis. The permeability of a pulp felt of given thickness, i.e., its beating degree, is shown to be a function of two characteristic pulp properties: the hydrodynamic specific surface (I) and the hydrodynamic specific volume (II) (*cf.* Robertson and Mason, B.I.P.C. 20: 396); both increase on beating. However, the influence of the increase in (I) is much more pronounced than that of (II) upon the development of the beating degree, to the extent that this development practically duplicates the trend of the increase in (I). The increase in (II) or the swelling, on the other hand, indicates an increase in strength properties. Hence, the development of the beating degree and that of the strength properties are the result of two entirely different beating effects. Although fibrillation (the bursting of the outer fiber walls) must precede swelling, it is shown that the increase in strength properties depends upon swelling and not upon fibrillation. Formulas are given which permit a graphical representation of the development of the beating degree and strength properties (expressed as breaking length) and the prediction of both magnitudes from a few experimental data. 10 figures. E.S.

ESCARD, J., SAULQUIN, A., and GIRARDY, E. A contribution to the study of the beating phenomenon. Bull. assoc. tech. ind. papetière 5, no. 7: 366-74 (November, 1951). [In French]

The changes in surface area of refined cotton linters on beating in a laboratory beater were measured by the silvering technique, nitrogen adsorption, and water-vapor adsorption. The variations in the external and internal surfaces and, hence, the accessibility of the fibers could thereby be determined. The silver surface represents the effects of mechanical fibrillation at the higher beating degrees; the curve ascends rapidly until 50° S.-R. is reached and then remains constant. The surface area depicted by nitrogen (and water-vapor) adsorption ascends throughout the entire beating cycle and represents the effect of plasticity of the fibers. The difference between the two surfaces at the advanced stages of beating corresponds to the variations in certain papermaking properties at higher beating degrees. Breaking length, folding endurance, and burst (which all depend upon plasticity) increase at higher degrees S.-R.; tear, on the other hand, which is correlated with fiber length, gives an entirely different curve. These results obtained with purified linters do not hold for nonpurified pulps, as preliminary experiments with kraft pulps indicate. 1 table, 6 diagrams, and 12 references. E.S.

SHCHEGLOV, I. M. Continuous fractionation of pulp in batch-type beaters. Bumazh. Prom. 25, no. 5: 20-5 (September-October, 1950). [In Russian]

The continuous fractionation of pulp during beating is accomplished by the arrangement of three beaters in series. The most highly beaten pulp in the first beater is removed at a point just beyond the beater roll, transferred to the second unit, and ultimately passed to the third beater by means of an interconnecting trough. 4 tables and 3 figures. E.G.S.

STEPHANSEN, E. The beating of chemical pulps at different temperatures. Bull. assoc. tech. ind. papetière 5, no. 7: 350-65 (November, 1951). [In French] *cf.* B.I.P.C. 21: 381.

The article is identical with that abstracted in the previous reference. E.S.

BOARD

ANON. Fibrit, a fibrous material for the manufacture of shaped articles which are true to size. Allg. Papier-Rundschau no. 24: 1034 (Dec. 31, 1951). [In German]

The disadvantage of the molded-pulp process is that it is not suitable for the manufacture of articles with accurate size requirements. A new material, "Fibrit," with almost woodlike properties has been developed in Germany. It consists of coarse, long-fibered groundwood pulp and 50% waste paper, with additions of size and alum, and is claimed to satisfy very strict demands with regard to accuracy in size, hardness, and smoothness of surface; it may be shaped as desired. Possible applications in the automobile, radio, electrical, refrigerator, and packaging industries are listed. E.S.

BOARD—CONVERSION

BOXBOARD CONTAINERS. Folding paper box finishing operations.

Article 3—How cartons are stitched. Boxboard Containers 70, no. 710: 16, 18 (February, 1952); *cf.* B.I.P.C. 22: 395.

Although carton stitching is usually confined to specialized applications, it is being used increasingly for a wide variety of boxes. Semiautomatic stitching operations are typical. The preparation for a stitching operation, the operation itself, and carton handling after stitching are described. 2 illustrations. M.W.

BOARD, INSULATING

WALTON, CHARLES L. The manufacture of insulation board. Paper Trade J. 134, no. 7: 30, 32-4 (Feb. 15, 1952); Pulp & Paper 25, no. 8: 58, 60 (July, 1951). [Abridgement]

The author describes the manufacturing process used by the Simpson Logging Co. at Shelton, Wash., for the production of insulating board. A unique feature of this process is the use of old-growth Douglas-fir (sawmill slabs, edgings, and wood trimmings supplied by the company's wood-conversion plants) which is pulped by a semichemical procedure. M.W.

BOARD MILLS

FIBREBOARD PRODUCTS. Modern paperboard plant. Chem. Eng. 59, no. 2: 240-3 (February, 1952); *cf.* B.I.P.C. 20: 277-8.

The new kraft pulp and paperboard mill at Antioch, Calif., is described. The operations of the mill are divided into two phases: the production of bleached or unbleached kraft from logs, and the production of semichemical 9-point corrugating material from chipped wood and box ends (waste wood from box factories). Two machines are employed, a Fourdrinier unit and a cylinder machine. The capacity of the mill is 250 tons per day of kraft and semikraft paperboard. 6 illustrations and 1 flow diagram. M.W.

BOARD SPECIALTIES

REMCO FOOD PRODUCTS, INC., *New York.* Paper plates that take a beating. Modern Plastics 29, no. 6: 82-3 (February, 1952).

Melamine-impregnated sulfite paper blanks are compression molded to produce plates which are greaseproof and heat resistant. They may be reused but are sufficiently economical to be disposable after one use. One type is employed for baking pies. The heat resistance of the plates depends on the formulation of the impregnant and the degree of impregnation. The impregnant contains Monsanto's Resimene, and the finished plates contain less than 1% melamine resin. 7 illustrations. M.W.

BOOKBINDING

BROOKOVER, THOMAS, SIMMONDS, HERBERT J., and CUSHMAN, MEL. Warping due to moisture changes. Share Your Knowledge Rev. 32, no. 5: 22-5 (February, 1952).

Dimensional changes which result from changes in moisture content are the cause of warping in both bookbinding paper and board. If it were possible for a manufacturer to supply board at a moisture content near the level of the receiving plant, the problem would be virtually eliminated. End papers are particularly subject to warping, and it is suggested that a paper of low fiber density or surface-sized sheets might prevent or minimize distortion. M.W.

CALCULATIONS

THE PAPER CONTAINER. Estimating the quantity of bags from the reel. Paper Container 65, no. 3: 63; no. 4: 91, 93; no. 5: 119, 121; no. 6: 147 (September-December, 1951); 66, no. 1: 7; no. 2: 35, 37 (January, February, 1952).

Data are presented on the following: machinery manufacturers' hourly output figures for different sizes and styles of bags and qualities of paper; reel-weight calculations; theoretical weights for 1000 bags in varied sizes and a formula for checking production of 1000 from reel weight; a formula for determining the amount of paper required and formulas for calculating reel weight and yardage; types of kraft paper bags; and varieties of bags made by the industry in the United Kingdom. M.W.

CASEIN

WILSON, H. L. Casein summary 1951. Paper Trade J. 134, no. 8: 136-7 (Feb. 22, 1952); *cf.* B.I.P.C. 21: 454-5.

The high price of Argentine casein during the first part of 1951 stimulated casein production in European countries, and by mid-March plentiful supplies of French and Danish caseins were available at prices far below those for Argentine material, with the result that Argentina has been displaced as the principal source of supply to the U. S. market. During the second half of the year demand decreased as consumers reduced inventories, and prices also fell off. This condition will discourage both European and domestic production so that no further price reductions are anticipated for 1952. 4 tables. M.W.

CELLULOSE

MOYER, WENDELL W. Industrial cellulose research. Chem. Eng. News 30, no. 6: 510-13 (Feb. 11, 1952).

Following a brief discussion of the scope and limitations of industrial research in general, the problems of industrial research on cellulose are considered under five divisions: supply problems, purification problems, application problems, chemical problems, and fundamental problems. 3 illustrations. M.W.

RÅNBY, BENGT G. The cellulose micelles. Tappi 35, no. 2: 53-8 (February, 1952).

The author suggests that cotton and wood cellulose are built up from the micellar strings of a uniform width (~70 A.) which are readily liberated by mechanical treatment (e.g., ultrasonic waves) for investigation under the electron microscope. When hydrolyzed, the micellar strings which retain their widths are cut into short fragments, i.e., micelles. The latter form colloidal solutions. The native cellulose micelles have a length of about 500 A. The mercerized micelles are shorter which indicates that they are partly fragments of the native micelles. Regenerated cellulose fibers (viscose and cuprammonium rayons) also contain strings of the same width as the micellar strings. After hydrolysis, these strings possess very short micelles (100-110 A.) of a lower absolute crystallinity than the native micelles. All micelle lengths are in agreement with separately measured D.P. values for the hydrates of the hydrocelluloses. The native cellulose micelle as a fundamental cellulose particle, the synthesis of cellulose in the living cell, and the probable difference in fine structure between cotton and wood cellulose are discussed. 16 figures and 38 references. E.S.

WAGNER, ROBERT E., and PACSU, EUGENE. Cellulose studies. Part XVI. The reaction of cellulose with formaldehyde. Textile Research J. 22, no. 1: 12-20 (January, 1952); *cf.* B.I.P.C. 20: 427.

A new method for reacting cellulose and formaldehyde in the vapor phase using acid catalysts is described. Acids as weak as boric acid were effective in introducing up to 6% covalently bonded formaldehyde. The results of reaction conditions where the catalyst concentrations ranged from 1 to 10% and the reaction temperatures from 110 to 150°C. are presented. A chemical investigation of the structure of the reaction product showed that formaldehyde preferentially substitutes the secondary hydroxyl groups of cellulose to yield a structure represented by the general formula R-O-CH_2-O-R', where R and R' indicate glucose residues in parallel chains. 4 tables and 20 references. E.S.

CELLULOSE—DEGRADATION

BOGATY, HERMAN, CAMPBELL, KENNETH S., and APPEL, WILLIAM D. Some observations on the evaporation of water from cellulose. Textile Research J. 22, no. 2: 75-81 (February, 1952).

The influence of water on the deterioration of cellulose is discussed, with special reference to the deterioration at the brown line which forms when water rises in cotton by capillary action. The brown, fluorescent, water-soluble material results from the evaporation of the water at the cellulose-water-air interface. Oxycellulose of the mildly reducing acidic type is formed. The oxidation appears to occur in part at the primary hydroxyl group, with the formation of polyglucuronic acid followed by chain scission and formation of soluble, low-molecular weight fractions. The deterioration proceeds even at moderate temperatures and in diffused light indoors. The brown-line effect undoubtedly contributes significantly to the degradation of cotton during its production, processing, and use. 3 tables, 2 figures, and 23 references. E.S.

CELLULOSE—OXYCELLULOSE

BOGATY, HERMAN, CAMPBELL, KENNETH S., and APPEL, WILLIAM D. The oxidation of cellulose by ozone in small concentrations. Textile Research J. 22, no. 2: 81-3 (February, 1952).

Laboratory experiments show that ozone in amounts which may occur in air at the earth's surface (up to 0.06 p.p.m.) deteriorates cotton textiles when they are wet. The deterioration is slight in comparison with that of other elements of weathering, such as light, heat, wetting and drying, and micro-organisms. Fifty days of exposure to air containing 0.02-0.06 part of ozone per million were required to reduce the breaking strength of wet print cloth 20% and increase the fluidity in cuprammonium solution from 8 to 16 rhes. When exposed dry, the cloth underwent little or no change in these characteristics. An increase in concentration of ozone led to an increase in the deterioration of the cellulose. 3 tables, 1 figure, and 9 references. E.S.

HEAD, FRANK S. H. The action of diazomethane on cotton and various modified cotton celluloses. J. Textile Inst. 43, no. 1: T1-23 (January, 1952).

The action of diazomethane at 0°C. on cotton, mercerized cotton, hydrocelluloses, and three varieties of oxycellulose is reported. The methylation of hydroxyl groups is very slow under dry conditions, except with nitro-

gen dioxide oxycelluloses, but the addition of water greatly accelerates the reaction, probably because the swelling effect of the water renders the hydroxyl groups more accessible. With the nitrogen dioxide oxycelluloses, esterification of the carboxyl groups is rapid, and considerable methylation of the hydroxyl groups occurs simultaneously, even in the absence of water. The reaction of diazomethane with the aldehyde groups in the periodate and dichromate oxycelluloses destroys or lowers their reducing power and alkali sensitivity; these effects were not observed with nitrogen dioxide oxycellulose. When periodate oxycelluloses in which the degree of oxidation approaches the theoretical limit are treated with diazomethane, materials of constant methoxyl content equivalent to about one methoxyl group per C_6 unit are obtained. Diazomethane treatment reduces the hygroscopicity of cotton and modified cotton celluloses. 12 tables, 6 figures, and 33 references. M.W.

MELLER, ALEXANDER. Studies on modified cellulose. II. The hot alkali stability and acid hydrolytic resistance of modified cellulose. Tappi 35, no. 2: 72-5 (February, 1952); *cf.* B.I.P.C. 21: 615-16.

Extensive oxidation of cotton cellulose by periodic acid resulted in oxycelluloses of increased moisture-regain capacity. The increase in moisture regain resulting from oxidation of cotton cellulose with an acid solution of potassium dichromate was less pronounced and seemed to be complicated by superimposing effects. Reoxidation of dialdehyde oxycelluloses by chlorous acid had only a comparatively small effect on moisture regain. Chlorous acid oxidation of dichromate oxycelluloses decreased the moisture adsorption significantly, suggesting that uronic acid carboxyls present in oxycelluloses may either possess a lower "affinity" for water or that they may be involved in the formation of cross bonds and contribute to a lower accessibility of water vapor. The moisture regain of hydrocelluloses prepared by means of hot acid solutions showed a decrease. Hydrocelluloses prepared by cold acid solution showed a slightly greater moisture adsorption. The moisture-adsorbing capacity of gluconic acid oxycelluloses was only slightly greater than that of the parent hydrocelluloses. On the conversion of oxycelluloses containing uronic acid carboxyls into calcium salts the moisture-regain capacity was increased considerably. A close relationship appears to exist between moisture-regain capacity and acid hydrolytic resistance of modified celluloses. A similar close relationship was found between carbonyl-group content of oxycelluloses and their hot-alkali stability. Whereas acid hydrolytic resistance of modified celluloses is overwhelmingly influenced by physical structural characteristics, their hot-alkali stability is predominantly affected by chemical constitution. The increased moisture-regain capacity of oxycelluloses in which the carboxyl groups have been converted to calcium salts indicates that in drying of such oxycelluloses the extent of cross-bond formation (involving probably secondary valence type of bonds) is reduced. 3 tables, 3 figures, and 11 references. E.S.

CHEMICAL ENGINEERING—ESTIMATES AND COSTS

CHEMICAL ENGINEERING. How process equipment costs varied. Chem. Eng. 59, no. 2: 191 (February, 1952); *cf.* B.I.P.C. 21: 457.

The Marshall and Stevens annual average indexes of comparative equipment cost for eight process industries, including the paper industry, and four related industries are presented. The data cover the period 1913-1951. 2 tables and 1 figure. M.W.

CHEMICAL TESTING—CARBOHYDRATES

LINDBERG, BENGT, and MISIORNY, ALFONS. Quantitative analysis of reduceable carbohydrates by means of sodium borohydride. Svensk Papperstidn. 55, no. 1: 13-14 (Jan. 15, 1952). [In English]

A new method for the quantitative determination of reducible carbohydrates involving reduction of the sugars in aqueous solution by a known excess of sodium borohydride, followed by decomposition of the excess of the reagent and measurement of the hydrogen involved, is described in detail. The entire determination requires approximately two hours, and the reaction flask must be maintained at constant temperature. Tabulated data for eight aldoses and two ketoses showing a maximum error of ±2.7% are included. 1 table, 1 figure, and 2 references. R.C.R.

CHEMICAL TESTING—CELLULOSE—ACCESSIBILITY

TARKOW, HAROLD, and STAMM, ALFRED J. The reaction of formic acid with carbohydrates. I. The reaction of formic acid with sugars. J. Phys. Chem. 56, no. 2: 262-6 (February, 1952).

A simple method for following the reaction of formic acid with alcohols is described. It is based on the conversion of unreacted acid to carbon monoxide by means of acetic anhydride. Formic acid is shown to react only with the hydroxyls in positions 4 and 6 in glucose. It is pointed out that, wherever preferential reactivity has been reported for hydroxyls in positions 1, 2, and 3, alkaline activation was required. 4 figures and 15 footnotes. E.S.

TARKOW, HAROLD, and STAMM, ALFRED J. The reaction of formic acid with carbohydrates. II. Polysaccharides: a new method for determining accessibility. J. Phys. Chem. 56, no. 2: 266-71 (February, 1952).

The maximum degree of interaction of a polysaccharide with formic acid is shown to be a measure of the accessibility of the material. The initial formic acid content at which the combined formic acid becomes constant is a measure of the fiber-saturation point. For different polysaccharides, the moisture adsorption at a given relative humidity is proportional to the accessibility. On extrapolating these curves, the moisture adsorptions for 100% accessible cellulose are calculated. The analysis of the moisture adsorptions for such a theoretical cellulose shows that the adsorption of three molecules of water per available glucose residue is not complete even at 90% R.H. 1 table, 6 figures, and 12 footnotes. E.S.

CHEMICAL TESTING—CELLULOSE ESTERS—ACYL CONTENT

AMERICAN CHEMICAL SOCIETY. *Division of Cellulose Chemistry. Committee on Standards and Methods of Testing. Subcommittee on Acyl Analysis.* Interlaboratory study on determination of acetyl in cellulose acetate. Anal. Chem. 24, no. 2: 400-3 (February, 1952).

The Eberstadt method [*cf.* B.I.P.C. 1, no. 12: 11 (August, 1931); 11: 395], which is used for the determination of acetyl in cellulose acetate was investigated in an interlaboratory study. The results, which are a measure

of the performance of the method in practical use, showed satisfactory precision, but less than satisfactory accuracy. The causes for the variations were not completely established, although deviations from the procedure and insufficient time of contact of standard acid with regenerated cellulose during the back titration accounted for some of the larger variations. 5 tables, 3 figures, and 7 references. M.W.

CHEMICAL TESTING—PAPER—ASH

NATKINA, L. N. Analysis of titanium-containing paper ash. Bumazh. Prom. 25, no. 4: 18-22 (July-August, 1950). [In Russian]

Alternate gravimetric-titrimetric methods are presented for the analysis of paper ash which contains titanium. The first procedure is specified for samples which include barium sulfate, and the second for those which contain silicon dioxide, calcium sulfate, and magnesium compounds. 2 analytical flowsheets and 1 figure. E.G.S.

CHEMICAL TESTING—PAPER—FILTER PAPER

GIERTZ, HANS WILHELM, and GRAN, GUNNAR. Considerations on the resistance of filter paper to dissolution. Svensk Papperstidn. 55, no. 2: 38-43 (Jan. 31, 1952). [In English; German and Swedish references]

The suitability of the α-cellulose determination as a criterion of the resistance of filter paper to aqueous solutions (as recommended by Scribner and Wilson, *cf.* B.I.P.C. 18: 37) is criticized. The present authors emphasize that, on treatment with 18% sodium hydroxide, carbohydrates not only of amorphous interfibrillar substance (γ-cellulose) but also of degraded resistant cellulose (β-cellulose) are dissolved. In the case of filter paper, the quantity and character of the γ-cellulose is probably of prime significance. A method for determining minute quantities of dissolved carbohydrate material was developed and is described; it involves disintegration, filtration, oxidation with strong sulfuric acid-dichromate solution, titration with standard permanganate solution, and potentiometric determination of the end point. The α-, β-, and γ-cellulose contents, as well as their solubilities in 1.0 *N* sodium hydroxide, were determined on several filter papers, and on textile cuttings and rags which had been bleached and purified by different procedures. In most cases, a relationship between α-cellulose content (I) and alkali solubility (II) could be established to the extent that a low (I) corresponded to a high (II) in 1.0 *N* sodium hydroxide; however, certain pulps were also found which exhibited a low (II) in spite of a low (I). From this it must be concluded that the determination of (I) is not the correct procedure for the evaluation of the suitability of filter paper for analytical purposes. A method is required and should be developed which permits the direct determination of the cellulosic components which dissolve in the liquids commonly employed in analytical work. 4 tables, 3 figures, and 12 references. E.S.

CHEMICAL TESTING—PULP—ASH

WULTSCH, F., and SENGER, F. Ash in pulp. Wochbl. Papierfabr. 79, no. 23: 751-6 (Dec. 15, 1951). [In German]

This is a critical study of the small quantities of mineral and inorganic substances present in chemical pulps which can be isolated by ashing; certain of these constituents are known to cause troubles during conversion

processes. The authors studied the origin of the ash, and its composition and behavior during the different stages of the pulping process. The total ash and the percentages of calcium, magnesium, sulfur, silicon, iron, manganese, copper, and lead were determined in the chips during the filling of the digester, and in the pulp after blowing, screening, thickening, the first and last filter, prebleaching and the final bleach, acidification, and the wet machine. The behavior of the individual ash components is illustrated in curves; these show that significant changes during the manufacture of the pulp take place, involving ion-exchange reactions and adsorption and precipitation processes. For the amount and type of ash in the finished pulp the cooking and bleach liquors and the raw material (wood) are principally responsible, whereas the machinery plays only a subordinate role. The process water which contains the responsible metals in various concentrations may continually introduce these constituents during the different washing procedures. In conclusion, the possibilities for de-ashing the pulps are considered. In view of the fact that the ash constituents may be reintroduced frequently during the manufacturing process, only treatments of the finished pulp will prove successful. Acidification in mill trials did not give satisfactory results, whereas tests for exchanging the metal ions with anions by complex formation seem to indicate the feasibility of this method. 1 table, 9 diagrams, and 11 references. E.S.

CHEMICAL TESTING—PULP—CAUSTIC SOLUBILITY

WILSON, KARIN, RINGSTRÖM, ERIK, and HEDLUND, INGVAR. The alkali solubility of pulp. Svensk Papperstidn. 55, no. 2: 31-7 (Jan. 31, 1952). [In English; German and Swedish summaries]

The solubility of pulp in sodium hydroxide (I) solutions of different concentrations up to 18% has been determined for a number of different pulp samples. These determinations have shown that the solubility reaches a maximum at about 10% (I) and that this maximum depends on the β-cellulose which has its maximum solubility at this concentration, whereas the solubility of the γ-cellulose increases continuously at least up to 20% (I). The solubility of β-cellulose in 18% (I) is very small. The total solubility in 18% (I) is thus a measure of the γ-cellulose content, and the difference between the solubilities in 10 and 18% (I) is an approximate measure of the β-cellulose content. Wood contains no β-cellulose, but rather large amounts of γ-cellulose of a low D.P. (10-30). During the cook, part of the γ-cellulose is dissolved and removed at the same time that β-cellulose is formed from the α-cellulose. A pulp which is digested to a low viscosity thus has a low γ-cellulose and a rather high β-cellulose content. During bleaching, very little γ-cellulose is removed but, especially when bleaching to a low viscosity, some β-cellulose is formed. From the solubilities in 18 and 10% (I) certain conclusions can be drawn as to whether degradation has taken place during the cooking or bleaching operations. The β-cellulose is not a well-defined fraction with a certain maximum D.P.; however, it is very dependent on the structure of the cellulose. A pulp sample which has been dissolved and then reprecipitated has a much higher β-cellulose content with a higher D.P. than an untreated pulp. If the pulp is first treated with water and subsequently sufficient alkali is added to reach a 10% (I) concentration, the amount of β-cellulose formed will be higher than if the pulp is directly treated with 10% (I). Beating of the pulp increases the β-cellulose content appreciably. During the aging of the alkali cellulose, considerable amounts of β-cellulose are formed, which has about the same D.P. as the β-cellulose in the pulp before aging. If the β-cellulose content of the pulp is not considered to have any pronounced effect upon rayon (or any other manufactured product), the α-cellulose determination

according to the Swedish standard CCA 7 (originated by Cross and Bevan; *cf.* B.I.P.C. 15: 46) must be misleading in pulp evaluation; in any case, it is no indication of the yield to be expected. If, on the other hand, the β-cellulose content is considered to have some effect upon rayon quality, the solubility in 18% (I) and the difference between the solubilities in 10 and 18% (I) must be better measures of pulp quality than the α-cellulose value (CCA 7) commonly used at present for this purpose. 4 tables, 4 figures, and 22 references. E.S.

CHEMICAL TESTING—PULP—COOKING DEGREE

BORLEW, P. B. Problems related to the evaluation of the degree of cooking. Tappi 35, no. 2: 99-101A (February, 1952).

The author discusses the difficulties encountered in the evaluation of the degree of delignification of pulps by conventional methods, with particular reference to the work by Wacek and Schroth (*cf.* B.I.P.C. 21: 618-19). Evidence is presented that the Roe chlorine number as modified by Bathurst Power & Paper Co. in Canada is a more useful guide in the routine control of high-yield and ordinary kraft cooking than the conventional permanganate numbers. 3 tables and 1 figure. E.S.

CHEMICAL TESTING—PULP—LIGNIN VALUE

BETHGE, PER OLOF, GRAN, GUNNAR, and OHLSSON, KARL-ERIK. Determination of lignin in chemical wood pulp. 1. Principles and methods. Svensk Papperstidn. 55, no. 2: 44-8 (Jan. 31, 1952). [In English; German and Swedish summaries]

Following a brief review of previous pertinent studies of lignin absorption spectra in the visible and ultraviolet ranges, the authors describe a direct spectrophotometric method for determining the lignin content of chemical pulps. The pulps are dissolved in approximately 80% phosphoric acid (I) of high purity; some types of pulp may require a somewhat higher concentration. With this solvent, time and temperature are much less critical than with sulfuric acid used by Løschbrandt (*cf.* B.I.P.C. 20: 906). The next day the absorbency is measured spectrophotometrically at 280 mμ. Absorption spectra of different types of lignin and pulps dissolved in 80% (I) are included; a good agreement of the curves obtained with the individual lignin preparations dissolved in (I) and in water, and between lignosulfonic acid and sulfite pulp, thiolignin and sulfate pulp, and Brauns' native lignin and sprucewood could be established. Beer's law was found to be valid over an appreciable concentration range. The experiments are reproducible; the deviation of the individual determinations from the mean value is approximately 2%. 1 table, 7 figures, and 22 references. E.S.

CHLORINE

CROWLEY, E. L. Chlorine handling in pulp mills. Paper Ind. 33, no. 11: 1311-12 (February, 1952).

The author discusses the more specific chlorine-handling methods used in pulp mills, including chlorine storage and unloading, the compressor providing a padding of air of sufficient pressure to maintain a uniform flow of chlorine into the mill at all temperature ranges, evaporators for liquid chlorine, and pipings, valves, and packings. 1 illustration. E.S.

CHLORINE DIOXIDE

BROWN, RICHARD W. Thermal decomposition of chlorine dioxide. Tappi 35, no. 2: 75-80 (February, 1952).

Chlorine dioxide is a desirable bleaching agent for paper pulp because it oxidizes the coloring agents to colorless materials with almost no degradation of the cellulose. A product is obtained which combines the strength properties of an unbleached pulp with a high degree of whiteness. The commercial use of chlorine dioxide has been limited mainly by its high cost, but presumably also by a lack of knowledge of its general chemistry. The purpose of this study was to investigate the thermal decomposition of chlorine dioxide in both gas and solution phases and to determine the rate of the reaction between chlorine and chlorine dioxide. In the gas phase, chlorine dioxide undergoes thermal decomposition into chlorine and oxygen but, in aqueous solution, it undergoes catalytic hydrolysis into chloric and hydrochloric acids. If no catalyst is present, the solutions are quite stable, even at 96.5°C. A catalyst apparently is produced by overheating an impure grade of potassium chlorate when preparing chlorine dioxide by the reaction of chlorate and oxalic acid. Even catalyzed solutions become stable after about 16 hours at 96.5° (about 40% hydrolyzed). Stability is produced by the build-up in hydrogen- and chloride-ion concentration. Attempts to identify the catalyst have been unsuccessful, although chlorine monoxide at a critical concentration does cause appreciable hydrolysis. The reaction between chlorine and chlorine dioxide does not follow a simple mechanism, although a second-order reaction fits the data to a first approximation. Curves showing the rate of the reaction at different temperatures and molar ratios of reactants are given. Assuming that the reaction is second order, temperature coefficients were calculated and the energy of activation found to be 21,000 cal./mole. 6 tables, 8 figures, and 4 references. E.S.

CLAY

GREGG, S. J., and BEHRENS, A. The bulk density of kaolin. J. Applied Chem. 1, supp. no. 2: S139-41 (1951).

The bulk volume of a nearly monodisperse sample of kaolin was determined in a vacuum and in the presence of various amounts of adsorbed water vapor. It was found that, when the amount adsorbed is approximately that required to fill a monomolecular layer on the surface of the kaolin particles, the bulk volume is about 15% higher than it is in a vacuum. The bulk volume then varies only slightly as the water content increases up to 1.3%, corresponding to about 15 molecular layers. 1 figure and 2 references. M.W.

ORR, CLYDE, JR., and BANKSTON, P. T. A rapid liquid-phase adsorption method for the determination of the surface area of clays. J. Am. Ceram. Soc. 35, no. 2: 58-60 (February, 1952).

A relatively simple, rapid, and reliable method for the determination of the surface area of clays has been developed. Basically, the technique consists of exposing a dried clay sample to a solution of known fatty acid concentration and determining by the analysis of an aliquot of the solution the fatty acid which remains after a period of agitation. Eastman Organic Chemicals' best grade of stearic acid (melting point, 68-69.5°C.) was found to be satisfactory. The difference between the acid in solution initially and finally gives the quantity of acid which was adsorbed by the clay. From this quantity and the size of the fatty acid molecule the total surface area of the clay can be calculated. The method should be of value in predicting

certain properties, such as adsorptivity, coloring power, and catalytic activity. 1 table, 3 figures, and 22 references. E.S.

COLORIMETRY

POSEY, ROBERT. The science of color control. Rayon and Synthetic Textiles 33, no. 2: 36-7, 60 (February, 1952).

Developments in the industrial use of spectrophotometry for establishing color standards, for color matching, plant color control, and dyestuff evaluation, and for determining light fastness of dyes are reviewed. 3 figures. M.W.

CONTACT ANGLE

BARTELL, F. E., and RAY, B. ROGER. Wetting characteristics of cellulose derivatives. I. Contact angles formed by water and by organic liquids. J. Am. Chem. Soc. 74, no. 3: 778-83 (Feb. 5, 1952).

The wetting characteristics of each of a fairly extensive series of cellulose derivatives were determined by measuring the angle of contact of water and of various organic liquids against these derivatives. Fibers, rods, foils (sheetlike materials of considerable thickness and rigidity without a supporting base), films (very thin layers of material attached to a supporting base), and coatings of the derivatives were used. A regular and systematic increase in the hydrophobic nature of the fatty acid esters was found to occur with an increase in length of the hydrocarbon chain; also, with the acetate derivatives, an increase occurred with an increase in acetyl content. Qualitatively, the increase in hydrophobicity with substituent groups was in the order: hydroxyl, formyl, acetyl, hydrogen phthalate, ethoxy, nitro, propionyl, and benzoyl. The D.P. appeared to have little influence on the wetting characteristics of the two sides. Organic liquids of high surface tension tended to give finite angles of contact on the derivatives. The hysteresis of the contact angle ranged from approximately 10 to over 40°. When cosines of the contact angles of water on a series of the fatty acid triesters were plotted against either the tensile strengths or the densities of the respective esters, a linear relationship was observed. 3 tables, 2 figures, and 18 footnotes. E.S.

CORROSION

SPRINGER, H. E. Corroded electrical equipment. Pulp & Paper 26, no. 2: 88 (February, 1952).

The importance of protecting electrical installations which may be subject to corrosion by pulp mill gases, dusts, or liquids is emphasized. Control, switch-gear, and load-center transformers, motor-generator sets, rectifiers, and similar apparatus should be located in enclosed, air-conditioned rooms. 4 illustrations. M.W.

TEEPLE, H. O. Corrosion problems 1952. Paper Trade J. 134, no. 8: 127-8 (Feb. 22, 1952).

Four approaches to corrosion problems in the pulp and paper industry are presented: (1) acknowledgment that corrosion problems can and do exist; (2) specification of a proper material of construction suitably resistant to the existing corrosive environment; (3) alteration of the environment to accommodate available materials of construction; and (4) cog-

nizance that corrosion problems can be substantially solved or alleviated at the mill design level. During 1952 when shortages of metals will occur and some metals will be "downgraded," a consideration of these points may solve or eliminate many corrosion problems. M.W.

COST—ACCOUNTING

CASE, G. R. Standards and control reports in paper manufacture. Paper Ind. 33, no. 11: 1316-20 (February, 1952).

A study is described which involved the analysis of accounting methods and cost controls in a paper mill producing tissue grades from purchased pulp, with a view of providing the tools for management to reduce costs and improve profits. A cost system was developed, the different phases of which are described in detail, in which standards were established to disclose variances aligned with critical cost areas in the papermaking process. These variances, as well as other operating data, are brought to the attention of management in both daily and monthly reports. 4 tables. E.S.

COTTON

GIUFFRIA, RUTH, and TRIPP, VERNE W. Effect of tension on the swelling of cotton fibers. Textile Research J. 22, no. 1: 21-5 (January, 1952); *cf.* B.I.P.C. 14: 79.

Changes in the cross-sectional area and circularity of cotton fibers tensioned in water and other media have been measured microscopically. It was found that the area increased significantly over that brought about by swelling in water alone. Fibers tensioned in bundle form at 0.45 g./grex for one hour in water showed an average increase of 98% in area as compared with dry untensioned fibers and an increase in circularity (axis ratio) of 57%. These increases were not retained on drying, even when tension on the fibers was maintained. Immersion without tension in urea solution, ethylamine, or sodium hydroxide of mercerizing strength, followed by the removal of the agent and drying, in each case produced increases in area and circularity over those of the untreated fibers. Tensioning at 0.45 g./grex during immersion in these reagents increased the circularity, but decreased the area with respect to the untensioned fibers. The elongation of fiber bundles tensioned in the various media was measured; sodium hydroxide produced the greatest elongation. 3 tables, 2 figures, and 4 references. E.S.

ORR, ROLLIN S., HUMPHREYS, GERALDINE C., and GRANT, JAMES N. Influence of cross-sectional shape of raw cotton on dimensional changes in mercerization without tension. Textile Research J. 22, no. 2: 89-93 (February, 1952).

The relation of the cross-sectional shape of the raw fiber to the changes that occur upon mercerization without tension was studied for a number of cotton varieties representing a wide range of maturities. Perimeters and diameters of fiber cross sections were measured by the use of a specially designed instrument; areas were also measured. It was found that the percentage increase in area and the percentage decrease in perimeter caused by loose mercerization are dependent upon the cross-sectional shape of the original raw fibers. Flat fibers shrank more in perimeter and increased more in area than did round fibers. This was partly explained as being the result of a change toward circularity. 2 tables, 4 figures, and 15 references. E.S.

DISINFECTION AND DISINFECTANTS

HERMAN, L. G., and REED, C. L. New coating agent promises mold-free surfaces. Food Eng. 24, no. 2: 71-2, 201-3 (February, 1952).

Solubilized nontoxic copper 8-quinolinolate has been found to be of outstanding value as a mold and yeast inhibiting agent when incorporated in surface coatings. The compound has been modified to be soluble in most nonpolar solvents and can be mixed with paint formulations, waxes, paraffins, oils, and fats. It is resistant to heat, withstands weathering and leaching, and seems to have a peculiar affinity for cellulosic materials. In tests with 75 varieties of yeasts and molds it inhibited growth in every case. 1 illustration and 15 references. M.W.

FEED WATER

MYERS, DAVID MOFFAT. Conditioning raw water for boiler use. Paper Ind. 33, no. 11: 1321 (February, 1952); *cf.* B.I.P.C. 22: 430.

The requirements of a satisfactory feed water for high-pressure boilers and the three most generally used methods for external conditioning (modification, evaporation, and demineralization) are described. For the final adjustment of alkalinity, oxygen adsorption, reduction of foam, etc., it is generally advisable to apply internal treatment as well. With a very good raw-water supply or small make-up requirements, internal treatment alone may be sufficient. 1 table. E.S.

FIBER—DIMENSIONS

DENTON, P. An interference micrometer for diameter measurement of textile filaments in moisture-controlled atmospheres. J. Sci. Instruments 29, no. 2: 55-7 (February, 1952).

An instrument is described for determining minute dimensional changes on a specimen enclosed in atmospheres of different but predetermined moisture condition. Localized Fizeau fringes, formed by reflection from a pair of aluminized glass plates that correspond to the fixed and movable jaws of a normal micrometer, are used as sensitive fiducial indicators for the appropriate setting of a micrometer head. One edge of the movable plate is laid in contact with the specimen and the other rests on a lever, the longer arm of which lies in contact with the micrometer head. This is adjusted until the fringe formation, which is viewed through the eyepiece of a Fizeau interferometer, indicates parallelism of the aluminized surfaces in a direction set by the line joining the ends of the lever; specimen thickness is then derived from the reading on the micrometer and a knowledge of the lever reduction ratio. Air of standard moisture condition moves past the specimen in a glass cell which is fitted with a flat roof to transmit the light beam from the interferometer. The instrument applies a small known force on the specimen and is especially applicable to measurements on compressible bodies. Data on the variation in diameter of a cellulose monofilament with moisture condition are presented to illustrate the performance of the instrument. 4 figures. E.S.

FIRE PREVENTION

GRAY, CHARLES M. Building code problems of the insulation board industry. Tappi 35, no. 2: 38A, 40A (February, 1952).

With reference to certain disastrous building fires, the author discusses the regulations of the four building codes of national scope which have also been extensively adopted by many municipalities for the local codes and the trend in some of them to place more restrictions on combustible materials, especially on wall and ceiling finishes, to prevent such tragedies. In the author's opinion, there exists no fireproof, only a fire-safe building, and the latter depends principally on the correct construction of the building to prevent the spread of fire and not merely on the prohibition of the use of combustible materials. Regardless of the construction materials used, there are sufficient combustible furnishings in a building in its usual use to create a tragic fire unless correct fire blocking is incorporated (divided floor areas, absence of open stairways, elevators, and chutes, etc.). The Insulation Board Institute has developed flame-resistant fiberboard finishes which gave excellent results in room burn-out tests. E.S.

FOAM

BIKERMAN, J. J. Mechanical destruction of young and old foam films. J. Phys. Chem. 56, no. 2: 164-5 (February, 1952).

Single foam films (1-3.5 cm. in diameter) of four very different chemical compositions were broken by a stream of mercury droplets. Fresh films (five seconds old) lasted in a mercury shower longer than aged films (60 seconds old). Similarly, fresh films of a "benzalkonium chloride" solution endured more punctures by a glass needle than older films. This result is in agreement with Rayleigh's theory of foams. It indicates also that mechanical devices for foam destruction are likely to be less efficacious the fresher the foam. The persistence of untouched single films was shorter for larger films; in several instances it was inversely proportional to the film area. Apparently, this cannot be accounted for by the probability theory of rupture. 1 table, 2 figures, and 8 footnotes. E.S.

MORSE, ROY E., and MOSS, HENRY V. Defoamers. Ind. Eng. Chem. 44, no. 2: 346-48 (February, 1952).

A method for evaluating the effectiveness of defoamers for use during yeast manufacture has been developed. The apparatus consists essentially of a device for passing cleaned, measured air through a mixture of yeast, molasses, and test defoamer at a controlled temperature, and the time for defoamer failure is observed. The details of the apparatus and the procedure are described. Tall oil-ethylene oxide condensation mixtures in the range of 1 mole of tall oil condensed with 0 to 12 moles of ethylene oxide were employed as the defoamer and found to offer a variable hydrophil-hydrophobe balance. The most effective defoaming occurred in the range of a 1:1 mole ratio, whereas in the higher ranges (1:12), foaming was enhanced. 2 tables, 4 figures, and 14 references. E.S.

FORESTS AND FORESTRY

ALBERT, FRANK A. Expansion of southern pulp and paper industry. Southern Pulp Paper Manuf. 15, no. 2: 50, 52 (February, 1952).

Plans have been announced which will add 60% to the production capacity of the southern pulp and paper industry over 1949 by 1953, and there is a possibility of an additional 13% increase. This expansion may increase pine consumption by 57% over 1949. Since the South does not have the margin of growth above cut to permit the rate of accumulation that would be required, and since there is no other source of available wood, a program of forest development is necessary. Such a program should include fire protection,

timber management improvement, planting, improved public land management, insects and disease control, research, and a plan of action developed by all interests concerned with growing timber. 2 tables. M.W.

HUBER, ALFRED. Examination of sustained yield management by the volume and increment control method. Pulp Paper Mag. Can. 53, no. 1: 104, 107, 109-10, 113 (January, 1952).

The control method of direct measurement of the stocking and increment volume of forests practiced in Switzerland is described. The main feature of the control method is that, by accurate measurements of stocking at intervals of approximately 10 years and by exact bookkeeping of the utilized volume, control of the effect of stand treatment is possible. By constant comparison the stands can be developed to provide a sustained production of highest possible yield. The principles which this practice has established are stated and supported by appropriate data. 5 tables. M.W.

LEVÓN, MARTTI. Some aspects of forestry in Brazil. Paper and Timber (Finland) 34, no. 1: 11-14 (January, 1952). [In Finnish; English summary]

The Parana pine forests of Brazil, the tropical forests in the Amazon River valley, and the forest industries in both sections of the country are discussed. E.S.

MALSBERGER, H. J. Conservation report of forester-general manager. Southern Pulp Paper Manuf. 15, no. 2: 42, 44, 46 (February, 1952); Paper Trade J. 134, no. 8: 145-6 (Jan. 22, 1952). [Abridgment]

The efforts of the Southern Pulpwood Conservation Association to encourage conservation practices in forestry operations are reviewed. The projects which are described have been directed at increased activity in tree planting, the control of inferior species, and the improvement of cutting practices on small holdings. Various means of presenting information are employed, including leaflets, exhibits, demonstrations, movies, forestry training camps, etc. M.W.

PORTER, EARL. Plant more trees. Southern Pulp Paper Manuf. 15, no. 2: 55-8 (February, 1952).

There is a need to grow more trees in the South for industrial-expansion requirements, and the interest of small landowners in the profits to be made from tree planting, fire control, and good cutting practices should be stimulated. This can be accomplished through state and county agencies and agricultural organizations. The pulp and paper industry can also participate by providing free seedlings to small landowners. At the present rate of planting 76 years would be required to plant the presently idle forest lands, but by adding 30% capacity to the tree nurseries each year it will be possible to catch up in about ten years. 8 references. M.W.

WATZEK, PETER F. Crossett's forest policies. Pulp & Paper 26, no. 2: 76, 78 (February, 1952).

The forest management program of the Crossett Paper Mills is outlined. Beginning with the current year, the forest will be managed for both pine and hardwood. 2 illustrations. M.W.

FUEL

SEELY, L. E., and WEBBER, L. E. How efficient is hog-fuel firing? Power 96, no. 2: 100-1 (February, 1952).

To determine the efficiency of a boiler fired with hogged waste wood and to make a comparison with coal and oil in cost possible, boiler tests were conducted in a New Hampshire box plant. Efficiencies of 63.2 and 68.2% were calculated; burning conditions appeared good, with smoke showing from the stack only when the fuel bed was leveled. The heating value was about half that of coal and one third that of oil on a pound basis. Hogged fuel requires large storage spaces because of its bulk, but it is clean to handle and use. Most plants which hog waste wood and fire it as a primary or secondary fuel do so on the spot. In all but extreme cases it is the cheapest sort of fuel available, since it is a waste product which involves only the cost of collection and hogging. An economic comparison with other fuels depends to a great extent on the cost of handling equipment. Unless other fuels are scarce or high priced, it is doubtful that hogged fuel can be hauled more than a few miles with any appreciable margin of profit. 1 table and 2 illustrations. E.S.

GLUE AND GELATINE

THOMSON, A. G. Gelatine and glue for paper manufacture. World's Paper Trade Rev. 137, no. 4: 264, 266 (Jan. 24, 1952).

Following a brief statistical review of British glue and gelatin manufacture, the extraction of gelatins and hide and bone glues from the raw materials and their conversion to commercial products are outlined. E.S.

HISTORY

DONNELLY, FLORENCE. The paper mill at Floriston in the heart of the Sierras. Paper Maker [U. S.] 21, no. 1: 59-71 (1952).

The paper mill at Floriston, Nevada County, Calif., which was in operation from 1900 to 1930, is described. 9 illustrations. M.W.

ELLIOTT, HARRISON. The oldest paper mill in the Western world and its historical background. Paper Maker [U. S.] 21, no. 1: 39-46 + 2 plates (1951).

The author describes the oldest paper mill in the Western world today, Cartiere Miliani-Fabriano, located at Fabriano in central Italy. It was founded sometime between 1268 and 1276 and has remained in continuous operation to the present time. 7 illustrations and 26 line watermarks used by the mill from 1293 to 1586. M.W.

KELLEHER, DENIS. Papermaking in Wales. Paper Maker [U. S.] 21, no. 1: 51-6 + 2 plates (1952).

The development of papermaking in Wales is traced, and the most important mill, which was founded at Holywell in 1690 and is now known as Grosvenor, Chater & Co., Ltd., is described. 5 illustrations and 1 map. M.W.

WEISS, WISSO. The watermarked papers of the paper mill Blankenburg in the course of centuries. Wochbl. Papierfabr. 79, no. 23: 771-2, 774-7 (Dec. 15, 1951). [In German]

The history of the mill and its owners is traced from its foundation in 1597 to the present. In 1882 the mill was converted to the manufacture of groundwood pulp and boards; in 1948 it was nationalized and currently produces hardboard from waste paper. 6 reproductions of old watermarks and 8 footnotes. E.S.

HYDRAULIC TURBINES

HAFNER, RAIMUND. Damage in hydraulic power plants by erosion. Wochbl. Papierfabr. 79, no. 23: 761-2, 764 (Dec. 15, 1951). [In German]

The origin of cavitations on hydraulic turbines, the influence of the structural material, the detection of the first signs of cavitation, the correct welding for the repair of damaged turbine sections, and effective preventives for erosion damages (or at least for minimizing their harmful effects) are discussed. 4 illustrations. E.S.

ILLUMINATION

ANON. Good illumination in the paper industry. Paper Making and Paper Selling 70, no. 4: 42-3 (Winter, 1951-52).

As in other industries, good illumination in a paper mill permits increased production and efficiency as a result of less fatigue and eyestrain for employees. Proper arrangement of lighting facilities and color have been found to be major factors in efficient illumination. M.W.

DÉRIBÉRÉ, M. Light and color during papermaking operations and in the testing laboratory. Bull. assoc. tech. ind. papetière 5, no. 7: 374-7 (November, 1951). [In French]

The psychological influence on productivity and the significance for safe operating conditions of correct color selection and illumination in working areas are discussed. E.S.

TUGMAN, J. L. Planned lighting at Marathon. Paper Ind. 33, no. 11: 1310-11 (February, 1952).

The new lighting installation with fluorescent lamps and the maintenance schedule in the Rothschild plant of the Marathon Corp. are described. E.S.

INORGANIC PAPER

GLASS FIBERS, INC. Fireproof fibers. Chem. Week 70, no. 9: 32, 34 (March 1, 1952); Paper Trade J. 134, no. 9: 13 (Feb. 29, 1952).

A new fiber is reported which is chemically identical with quartz. Paper made from the fiber will be used as an electrical and heat insulating material. It restricts electrical losses to a minimum at high frequencies, is resistant to temperatures up to 3000°F., and is relatively impervious to nuclear radiation. It is not susceptible to chemical breakdown. M.W.

INSECTS AND VERMIN

ANON. Spruce budworm spraying project. Pulp Paper Mag. Can. 53, no. 1: 115, 117 (January, 1952).

Under the joint sponsorship of the province of New Brunswick and the New Brunswick International Paper Company, an extensive spraying project will be launched in the spring in an attempt to save 300 square miles of forest from devastation by the spruce budworm with the use of formulated DDT. 1 illustration and 1 map. M.W.

INTEGRATED FOREST UTILIZATION

COOPER, PAUL E. The integration of forest using industries. Pulp Paper Mag. Can. 53, no. 1: 82-3 (January, 1952).

The author briefly reviews the evolution of logging to its present highly mechanized state and emphasizes the importance of integration of the entire line of forest industries to insure permanent and profitable plant operations and to safeguard the supply of raw materials. M.W.

KRAFT PULP AND PAPER

EVERY, DERNELL. Review of 1951 in the unbleached kraft paper industry. Paper Trade J. 134, no. 8: 138, 140 (Feb. 22, 1952); Southern Pulp Paper Manuf. 15, no. 3: 74, 76 (March, 1952); *cf.* B.I.P.C. 21: 470.

The kraft paper industry's demands were at record levels, and the production of unbleached kraft paper during 1951 exceeded 2.5 million tons, approximately 7.5% higher than the production in 1950. This increase was not consistently uniform in all grades; shipping-sack paper production increased by 20%, asphalting paper by 25%, gumming paper by 9%, grocers bag paper by 12%, and other bag and sack papers by 18%, whereas wrapping paper declined by 18% and envelope by 3%. The increased production is attributable to added capacity, increased efficiency, and a shift of machines which were operating on other products to unbleached kraft paper production. The controls imposed upon the industry during 1951 did not appreciably affect the industry's ability to produce. The rearmament program and the continuing adaptation of kraft paper to new applications indicate that the industry should register another record in 1952. M.W.

LIGNIN

BRAUNS, F. E., and SEILER, HEINZ. Reactions with homogenized sprucewood. Tappi 35, no. 2: 67-71 (February, 1952).

Since sprucewood is considered to be a heterogeneous product, an aqueous colloidal solution was prepared in which the wood fiber structure was completely destroyed. When the extraction of the homogenized wood, regenerated from the solution and obtained as an extremely fine powder, failed to give additional native lignin, the colloidal wood was methylated with diazomethane and with dimethyl sulfate. Lignin could not be extracted from the methylated products by inert solvents, which indicates that the lignin is present in wood either in a highly condensed state or in a chemical combination with other wood constituents. The ultraviolet and infrared absorption curves of sprucewood are presented. 5 figures and 3 references. E.S.

CHÊNE, M., and DEISSENBERG, CH. The possibilities for the utilization of lignin. Papeterie 73, no. 11: 621, 623, 625, 627, 629; no. 12: 682-3, 685, 687, 689, 691 (November, December, 1951). [In French]

The authors review the principal possibilities for the profitable utilization of lignin from spent sulfite liquor, black (sulfate or soda) liquors, and wood saccharification, as well as of lignin in wood. 26 references. E.S.

FREUDENBERG, KARL, and BITTNER, FRIEDRICH. Coniferyl methyl ether and other compounds related to lignin. Chem. Ber. 85, no. 1: 86-9 (1952). [In German] *cf.* B.I.P.C. 21: 241.

Coniferyl methyl ether, 3,4-(MeO)(HO)C_6H_3CH:$CHCH_2$OMe (I), has been prepared, in addition to other compounds related to lignin, such as 7-acetoxy-5-propyl-2-(3,4-diacetoxyphenyl) coumarone, 3-methoxy-2-benzoxy-5-propylbenzoic acid, and the corresponding phenylacetic acid. (I) treated with mushroom dehydrogenase in 0.07% aqueous solution at pH 7 and 20°C. gives an amorphous dehydrogenation polymerizate which gives a deep red color with phloroglucinol and hydrochloric acid. 7 references. F.E.B.

FREUDENBERG, KARL, and WILKE, GÜNTHER. Models for lignin chemistry, particularly for the formaldehyde-forming groups. Chem. Ber. 85, no. 1: 78-85 (1952). [In German]

α-Phenoxycinnamyl alcohol (traces), 3,4-dimethoxyphenyl-3-oxo-1-propanol (7%), 3-phenylglycerol (15.5%), 2,3-diphenyl-1,2-propanediol (0), acetoxymethylstilbene (0), 1-methoxy-3-oxo-2,5-diphenylpropane (21%), 3-oxo-2,3-diphenyl-1,2-propanediol (25%), 2,3-diphenylglycerol (30%), 2,3-diphenyl-1,3-propanediol (71%), and 1-methoxy-2,3-diphenyl-3-propanol (68%) have been prepared. On boiling with 28% sulfuric acid they yield formaldehyde (I) in amounts as given in the parentheses. Cuoxam spruce lignin gives about 3%, and hydrochloric acid lignin, about 2% (I). A dehydrogenation polymerizate from coniferyl alcohol gives 1.5-1.7% (I), and lignin extracted with an inert solvent at room temperature, 1.4-2% (I), but when subjected to a treatment as applied in the isolation of cuoxam lignin, the (I) yield increases to 2.4% which indicates that by this treatment some groups are converted into (I)-forming groups. On heating with organic solvents in the presence of mineral acids or with alkali, the (I)-forming group disappears; in the former case, a portion of it is recovered as acetals. α-(2-Methoxy-4-propylphenoxy)-3-4-dimethoxycinnamyl alcohol has been prepared as another lignin model compound. The formaldehyde determinations were carried out in a specially designed apparatus which allows the maintenance of a constant level during the distillation. 1 table, 1 figure, and 21 references. F.E.B.

KULLGREN, CARL. Lignosulfonic acid and its dissolution from sulfite pulps with water at room temperature. Svensk Papperstidn. 55, no. 1: 1-12 (Jan. 15, 1952). [In German; English and Swedish summaries]

Sulfite pulps contain calcium lignosulfonate in a solid state in various amounts, depending upon the cooking conditions. On treatment with hydrochloric acid, free solid lignosulfonic acid is formed. Its amount can be determined by treating the acid-washed pulp with sodium chloride and determining the "acid number"; from this the sulfur content of the pulp can be calculated and agrees very well with that determined directly. The lignosulfonic acid, after being saturated with hydrogen ions, can be rendered soluble by boiling with water or with alcohol; in the latter case alkoxyl groups are introduced into the lignosulfonic acid. In a pulp saturated with hydrogen ions, it is also rendered soluble by water at room temperature; however, the rate is slow and is not affected by an increased acidity. At the start, the rate of dissolution is in inverse ratio to the amount of lignosulfonic acid dissolved. The dissolution has been followed by the determination of the acid number, and an attempt has been made to find an expression for the rate of the dissolution process. When held at 100°C. for 15 minutes, the amount of lignosulfonic acid dissolved is the same as after standing 1225 hours at room temperature. The sulfur and methoxyl contents of isolated

lignosulfonic acids dissolved at room temperature vary from 3 to 4.7%, and 8.44 to 10%, respectively. The ratio of methoxyl to sulfur of a lignosulfonic acid from a hard pulp (acid number 17.53) is about 2.6, and that from a soft pulp, a little lower. The dissolution of the lignosulfonic acid is the result of a hydrolysis and, as shown by titration experiments, a new acid group (probably a carboxyl group) appears for each sulfonic acid group. In the liberated dissolved lignosulfonic acid this new acid group is free, whereas in the solid lignosulfonic acid the carboxyl group is combined with another part of the lignin molecule. In addition to this acid group, the solid lignosulfonic acid and that in solution possess a very weakly acid, probably a phenolic hydroxyl group for each two sulfonic acid groups. With methyl alcohol in place of water, an alcoholysis takes place. On heating a hydrogen ion-saturated pulp with methanol, methoxyl groups are introduced into the pulp, but not into the solid lignosulfonic acid; it is only after dissolution that the methanol reacts with the carboxyl group, thus causing an increase in methoxyl content. The lignosulfonic acid in solution is not stable, even at room temperature, as shown by the decrease in acidity which is probably caused by an intermolecular change. The color of a neutralized lignosulfonic acid darkens on addition of alkali; on boiling for 15-20 hours, the solution also becomes darker in color. Certain nitrates, particularly mercuric nitrate, precipitate the dissolved lignosulfonic acid. 15 tables and 10 references. F.E.B.

LEOPOLD, BENGT. Studies on lignin. Part VIII. Nitrobenzene oxidation and sulphonation of wood decayed by brown-rotting fungi. Svensk Kem. Tid. 63, no. 11: 260-71 (1951). [In English] *cf.* B.I.P.C. 22: 407.

The products obtained by decaying wood with brown-rot fungi have been studied by means of nitrobenzene oxidation and sulfonation. The same oxidation products are formed as from fresh wood in about the same relative proportions, but the yields based on lignin decrease with increasing degree of decay, particularly in the last stages. The portions of lignin which can be extracted with ethanol-benzene and with alkali give higher yields of vanillin than the rest of the lignin. The decayed wood is sulfonated rather rapidly, even in neutral media, with almost complete delignification. The main part of the formed sulfonic acids is rather similar to those obtained from fresh wood, although some fractions exhibit a considerable difference. These fractions are appreciably demethylated but show no "abnormal" phenolic hydroxyl content. The formation of carboxyl groups is indicated by a high oxygen content and a high barium-sulfur ratio. The author concludes that the decrease in the vanillin yield is caused by a preferential fungal attack on the "open" elements of the lignin. 6 tables, 8 figures, and 14 references. E.S.

PEARL, IRWIN A., and DICKEY, EDGAR E. Studies on lignin and related products. VII. The isolation of certain compounds from lignin oxidation mixtures by chromatographic techniques. J. Am. Chem. Soc. 74, no. 3: 614-17 (Feb. 5, 1952); *cf.* B.I.P.C. 21: 272-3.

Because the complex nature of fractions obtained by oxidizing lignosulfonate materials with cupric oxide and alkali precluded their complete analysis by previously employed procedures, recourse was made to adsorption chromatography. By means of this technique, the sodium bisulfite- and alkali-soluble fractions from such oxidations have yielded, in addition to previously isolated compounds, the following new oxidation products: 4,4′-dihydroxy-3,3′-dimethoxychalcone, 4,4′-dihydroxy-3,3′-dimethoxybenzil, 4,4′-dihydroxy-

3,3'-dimethoxybenzophenone, and an unidentified isomer of dehydrodivanillin which is probably a dihydroxydimethoxyformylbenzophenone. Although the isolation of these products can be explained by assuming their resynthesis from vanillin or the like originally formed by degradation of the lignin, there is also a possibility that some of the C_6-C_3 units in the lignin structure are linked together through the α-carbon atoms. 3 tables, 2 figures, and 10 footnotes. E.S.

TRAYNARD, PH., and ROBERT, A. A crystallized nitrolignin. Bull. assoc. tech. ind. papetière 5, no. 7: 401-5 (November, 1951). [In French]

The authors extracted a crystallizable "lignin" from poplarwood sawdust by suspending 600 g. of the wood in six liters of acetic acid at 40°C. and adding dropwise 165 ml. of concentrated nitric acid during a period of four days. The infrared absorption spectrum of the extracted substance indicates a lignin; its molecular weight is 1150. The compound contains four acid and two phenolic hydroxyl groups on the benzene rings. The results are not yet complete and further studies are in progress. 1 diagram. E.S.

MACHINERY—CHIPPERS

VAL'SHCHIKOV, N. M. Multiknife chippers. Bumazh. Prom. 25, no. 5: 15-19 (September-October, 1950). [In Russian]

A mathematical analysis of chipper operation is presented, and the following equation is given for the calculation of chipping capacity (Q): $Q = 60KnZ(\pi d_1^2/4)lc\Phi$ cu. m/hour, where K is the number of knives in simultaneous contact with the log, n is the number of revolutions of the disk per minute, Z is the number of knives on the disk, d_1 is the diameter of the log in meters, h is the depth of cut of the knives, Φ is the coefficient of feeding, and l_c is the chip length. 7 tables and 4 figures. E.G.S.

VAL'SHCHIKOV, N. M. A study of chipper operation. Bumazh. Prom. 25, no. 4: 12-16 (July-August, 1950). [In Russian]

In confirmation of current theoretical concepts, it was found that chipping capacity is proportional to the square of the diameter of the log, and that chipping force is linearly proportional to the width of the chipper. It is also shown that an increased angle of grinding of the knives and dull knives result in increased power consumption, and that increased chip thickness and chipping with wet wood are accompanied by a reduction in power consumption. The average amount of fines (passing a 5× 5-mm. screen) produced in a chipper of usual construction amounts to about 5% by weight, varying from 2.5-3% for sharp knives to 6-7.5% for dull knives and frozen wood. The average portion of oversize chips (retained on a 35 × 35-mm. screen) is about 7-10% by weight. 7 tables and 2 figures. E.G.S.

MACHINERY—CONVERTING MACHINERY

FRASER, R. K. Heat sealing equipment. Fibre Containers 37, no. 2: 113-16 (February, 1952).

Some of the various applications of heat-seal labeling and the equipment which is available are described. M.W.

MACHINERY—CONVEYORS

ANON. Pulp unloading system weathers fifteen year test. Can. Pulp Paper Ind. 5, no. 2: 16 (February, 1952).

Three conveyors which were installed at the Mead Corporation, Chillicothe, Ohio, 15 years ago are still giving reliable service. Each conveyor consists of a 36-in. wide, curved-end, overlapping steel apron mounted at the conveyor sides on two endless strands of steel strap-link roller chain. This is equipped with 4-in. diameter chrome iron rollers which ride on T-rail tracks in both the carrying and return runs. The speed of travel is 60 ft./min. 2 illustrations. M.W.

MACHINERY—CORRUGATING MACHINE

WERNER, A. W. The Wilson steam system. Fibre Containers 37, no. 2: 32, 34, 39 (February, 1952).

Methods for evaluating the efficiency of steam systems in use on corrugators are described, and the advantages of the Wilson steam system for this purpose are discussed; low steam consumption, high-speed production, and quality output are claimed for the installation. 2 figures. E.S.

MACHINERY—DRIVE

WADLEIGH, GEORGE. Differential gears in paper mills. Pulp & Paper 26, no. 2: 40 (February, 1952).

The author describes the development of differential sectional drives for paper machines. M.W.

MACHINERY—DRYERS

YANKA, DICK. American Maize Products starts flash dryer. Paper Trade J. 134, no. 8: 174, 177 (Feb. 22, 1952).

The first modern starch flash drier to be put in operation in the United States is described. The drier which is constructed almost entirely of stainless steel has a drying capacity of 300,000 lb. per day. The burners use propane or natural gas for fuel. 1 flow diagram. M.W.

MACHINERY—FELTS

WHEELWRIGHT, WILLIAM BOND. Keeping pace with papermaking. Barrell's Paper Annual 10: 8-14 (1951-1952).

The historical development of paper drying cylinders and drier felts is reviewed, and the properties of present-day drier felts are discussed, with particular reference to the products of the Barrell Company. 3 figures and 4 references. M.W.

ZATTI, AURELIO. Suction-couch jackets and their use. Ind. carta (Milan) 6, no. 1: 8-13 (January, 1952). [In Italian]

The manufacture, installation, starting, and maintenance of suction-couch jackets are discussed; data from Kenwood Bulletins XXVII and XXVIII are included. 2 tables and 5 illustrations. E.S.

MACHINERY—PRINTING MACHINE

ANON. How to make dies for the printer-slotter. Boxboard Containers 70, no. 710: 33-4, 36 (February, 1952).

Increasing attention is being given to printing on box surfaces, and special techniques are required. After the artwork is prepared, it may be transferred to rubber either by hand or by photographic means. Certain jobs may require

a transfer by positioning the die rubber around the cylinder and then burnishing the artwork to the rubber; in this way distortion is avoided. Some dies are prepared by using printers' type, a plate-making machine, or the bakelite die-making techniques. Directions are given for mounting the dies and assembling the units when more than one color is used. 5 illustrations. M.W.

HAMILTON, GEORGE. Printing and cutting-creasing survey. Boxboard Containers 59, no. 698: 20-1; no. 705: 15 (February, September, 1951).

A survey of folding-box manufacturers concerning printing and cutting-creasing equipment is reported. Most box manufacturers indicated that the bulk of carton output is being produced on presses that are slow in comparison with those used for other printing work; interest was reported in in-line rotary web-fed equipment. Problems with offset, delivery, feeder adjustment, and registrations were mentioned, in addition to a need for better boxboard. Statistics on press equipment show that the average carton plant's cutting-creasing equipment consists of approximately 3.4 platens, 3.9 cylinders, and 0.4 rotaries. Almost one of every three cylinder die presses in current use has been converted from a printing press. Approximately 54.7% of printing work is hand fed and about 14.6% is delivered by count. M.W.

MACHINERY—PUMPS

COLLINS, PARKMAN A. Pump troubles with mixed furnishes. Tappi 35, no. 2: 102A (February, 1952).

The author discusses the pump troubles caused by gaseous stocks which block the impeller inlet. The need for information on the vapor pressure and surface tension of stocks is pointed out, as well as for the development of an apparatus which will remove air from stock in a small enclosed space and leave the stock behind. E.S.

MACHINERY—ROLL GRINDING APPARATUS

EĬDLIN, I. YA., and SUKHOPAROV, A. A. Grinding of rolls for papermaking and finishing machines. Bumazh. Prom. 25, no. 5: 25-30 (September-October, 1950). [In Russian]

Practical instructions are given for the grinding of papermaking rolls (e.g., calender rolls, press rolls, suction rolls, and the like) constructed of various materials (e.g., chilled cast iron, granite, bronze, copper, steel, rubber, and paper). 4 tables and 3 figures. E.G.S.

MACHINERY—SAVE-ALLS

P—S. Waste-water problems, white-water recovery, and fresh-water consumption in the paper, board, and pulp industry. Wochbl. Papierfabr. 79, no. 22: 714-15 (Nov. 30, 1951). [In German]

A brief illustrated description of the Trimikro saveall developed and patented by Ernst Schmidt is given. 1 figure and 1 flow diagram. E.S.

MACHINERY—VALVES

PROCOPI, JOHN. How to select control valves. Paper Ind. 33, no. 11: 1313-15 (February, 1952).

The author describes the design and construction of the diaphragm motor-

control valves and discusses the factors and characteristics which should receive consideration in their selection. 1 table and 5 figures. E.S.

MACHINERY—VATS

COOK, H. D. Cylinder machines—some problems of design and operation. Paper Trade J. 134, no. 6: 21-2, 24, 26 (Feb. 8, 1952); Tappi 35, no. 3: 132-6A (March, 1952).

The author traces the evolution of the modern cylinder vat and explains the reason for the various changes in design. After pointing out some incorrigible imperfections of standard vats, speculation is made on the possibility of a radically new forming part in which a vacuum mold and no vat is used. 10 figures. M.W.

MILL MANAGEMENT

NIAGARA BOX FACTORY, INC., *New York.* Does a system really pay? Am. Boxmaker 41, no. 2: 16-19, 40-1 (February, 1952).

An efficiency system employed in straight-line setup-box production methods is described. Features of the system include a budget-control and excess-cost sheet, which is used to forecast such costs as overtime, depreciation, spoilage, etc., and a master manufacturing schedule which provides advance notice of the work which will be carried out during the week. Ordering of new stock is usually two days ahead of schedule to permit continued production in case of manufacturing difficulties or the completion of a job ahead of schedule. Modern equipment and the use of improved manufacturing techniques are also included in the efficiency system. 13 illustrations. M.W.

NATIONAL PRODUCTION AUTHORITY (NPA)

NICOLSON, L. P. The Pulp, Paper, and Paperboard Division of the National Production Authority. Tappi 35, no. 2: 86-9A (February, 1952).

The functions of the Division are outlined. E.S.

NEWSPRINT

LATHROP, E. C. Pulps from straw and sugarcane bagasse for manufacture of newsprint. Northern Regional Research Laboratory AIC 327: 4 p. (January, 1952).

Experiments at the Northern Regional Research Laboratory have shown that a paper with the properties of standard newsprint may be produced by replacing part of the furnish in standard newsprint by bleached straw pulp or by repulping unprinted newsprint paper and adding to this pulp 20% of bleached straw pulp. It is also indicated that virgin mechanical pulps which are made either from conifers or hardwoods can be converted to satisfactory newsprint by the addition of 20-30% of either bleached straw or bleached bagasse pulps. M.W.

SOKOLOVSKIĬ, D. S. Newsprint quality. Bumazh. Prom. 25, no. 5: 10-14 (September-October, 1950). [In Russian]

A discussion is given of the characteristics of newsprint produced by various Russian companies, including the Balakhnin and Kondopozh combines and the M. Gor'ki and Lyaskelya mills. E.G.S.

NEWSPRINT—STATISTICS

TIPKA, VERNON L. Newsprint paper in 1951. Paper Trade J. 134, no. 8: 146-54 (Feb. 22, 1952); *cf.* B.I.P.C. 21: 475.

Newsprint production in 1951 totaled 6,642,000 tons, a 5.5% increase over 1950. The U. S. production amounted to 1,125,000 tons which is 11% greater than 1950, and total Canadian production was 5,516,000 tons, 4.5% more than in 1950. This record production resulted in record shipments. Canadian exports in 1951 were valued at $536,374,000 or 10% over 1950, and 4,775,000 tons went to the United States, only 1% greater than the 1950 volume. U. S. exports are estimated at about 65,000 tons which represents a 47% increase over 1950, and U. S. imports are estimated at a record high of 4,985,000 tons. The U. S. total consumption in 1950 is estimated to exceed that of 1951 by less than 1%. A continued large demand for newsprint in 1952 is anticipated. Additional data on newspaper sizes and circulation and on advertising in newspapers, periodicals, radio, and television are included. 15 tables and 3 figures. M.W.

PACKAGING

ANGLO-AMERICAN COUNCIL ON PRODUCTIVITY. Packet foods industry productivity report. Brit. Packer 14, no. 1: 21-3, 37 (January, 1952).

The materials and techniques used in the United States for packaging dry foods are summarized and contrasted with British methods. M.W.

KLINGELHÖFFER, H. The possibilities and realizations of a functional package. Bull. assoc. tech. ind. papetière 5, no. 7: 384-92 (November, 1951). [In French]

The author presents a general discussion of the important role of functional packaging, the different requirements presented by each commodity, and the possibilities offered by various paper and board specialties and their combinations. Examples of satisfactory applications for special use requirements are included. 9 figures. E.S.

LETHELIN PRODUCTS COMPANY, INC., *Mount Vernon, N.Y.* Economical duster. Modern Packaging 25, no. 6: 103 (February 1952).

A new type of container affords controlled application of insecticides. Its construction consists of a specially molded rubber bulb cap which fits securely over the metal bead of a metal-end fiber canister open at one end. A perforated paperboard regulator disk fits inside the rim of the canister. The bulb is equipped with a rubber tip which the user opens by cutting off the end with scissors. 3 illustrations. M.W.

MILLER, IVAN C. The "wrong" packages sometimes are right. Food Eng. 24, no. 2: 96-7 (February, 1952).

Red Dot Foods, Inc., Madison, Wis., has developed a container for potato chips which comprises a sealed waxed-glassine bag inside a simple folding carton which is closed by tucking. This container extends the shelf life of the product two or more weeks and, although it is larger than former bags and does not permit the contents to be seen by the customer, it has proved to be very satisfactory marketwise. 2 illustrations. M.W.

MODERN PACKAGING. Kellogg's corn flakes. Modern Packaging 25, no. 6: 92-8, 193-4, 196 (February, 1952).

The packaging and merchandising techniques of the Kellogg Co. are described. The original container for corn flakes featured an outer waxed paper wrapper. It was found that greater product freshness was insured if the wrapper was placed inside the package as it is in the present package. The inner bag which is now used is made of glassine. The same type of container is used for all Kellogg cereals except for a sugar-coated variety which is sealed in aluminum foil for extra protection. 18 illustrations. M.W.

PACKAGING PARADE. Orchids to you . . . 3 days from Hawaii. Packaging Parade 20, no. 229: 66, 105 (February, 1952).

Special refrigerating mediums have been designed to protect orchids which are shipped to the United States from Hawaii. Several layers of newspaper are cut, folded into cellophane sleeves, and soaked in water. After sealing, they are frozen in a deep freezer. They thaw slowly with a minimum of dampness which stays sealed in the cellophane, and they provide a sufficiently low temperature to keep the orchids fresh. For shipment several layers of flowers between waxed paper are packed in corrugated cartons which are insulated with newspapers and refrigerated with several frozen cellophane packs; ti leaves which hold moisture are included. Different packaging techniques for summer and winter shipments are described. 6 illustrations. M.W.

SUFFOLK FARMS, *Revere, Mass.* A touch of seasoning. Modern Packaging 25, no. 6: 86-9, 187 (February, 1952).

Through the use of specially developed pouch packages and special machinery Suffolk Farms is now marketing bags of spinach with a packet of its "Tok" trade-marked seasoning enclosed, and its Salad Bowl mix of green vegetables with a pouch of French dressing. The heat-sealed pouch of French dressing is made of Pliofilm which is laminated to cellophane. The Tok pouch is made of polyethylene-coated paper, the film coating on the reverse side of the paper forming an inner lining. Both packets are formed and filled automatically on one machine. 5 illustrations. M.W.

PAPER—COATED

CASEY, J. P., and LIBBY, C. E. Penetration of the starch adhesive in a coating mixture into the base paper. Allg. Papier-Rundschau no. 24: 1034-6 (Dec. 31, 1951). [In German] *cf.* B.I.P.C. 19: 328-9.

This is a condensed translation of the American article. 3 tables and 3 diagrams. E.S.

PAPER—COATED (HOT-MELT)

WHITMORE, L. E. The use of polyethylene resins as paper coatings. Tappi 35, no. 2: 103-5A; discussion: 110-12A (February, 1952).

The author discusses the six polyethylene resins of varying molecular weights which are available at present, as well as their important properties. The DYNF resin with an approximate molecular weight of 18,000-19,000 finds the widest use in 100% polyethylene coating on paper; other types are

used as modifiers of paraffin. Commercially, polyethylene-coated paper is manufactured by three processes (hot solvent, hot melt, and extrusion lamination), each of which is described briefly. The resulting products possess the general properties of wax-coated paper plus a number of improvements, such as increased toughness, extensibility, film strength, flexibility at very low temperatures, absence of odor and taste, excellent chemical resistance, low water-vapor permeability, good heat sealability, and resistance to the action of greases before and after sharp folding. All the advantages of the coated paper also hold for the unsupported film, although additional strength is imparted by the former. Blends of the resins and paraffin waxes improve the properties of the wax-coated papers considerably; they are tougher, stronger, harder, and resist creasing even at low temperatures. Blocking temperatures are raised, and chipping and rub-off during handling are reduced. There is a growing market for both types, straight polyethylene-coated and polyethylene-wax-modified coated papers, whose properties are not competitive but rather complementary. The former are suitable for high-quality, durable, and more resistant packaging, and the latter for less critical applications which require lower-priced materials. E.S.

PAPER—COATED (ION EXCHANGE)

ERICKSON, D. R. The precipitation method of coating packaging paper. Tappi 35, no. 2: 108-9A; discussion: 110-12A (February, 1952); *cf.* B.I.P.C. 21: 860.

The principles of the process as applied to the greaseproofing of wrapping paper are outlined briefly. E.S.

UNTER. A new coating process by ion exchange. Wochbl. Papierfabr. 79, no. 22: 713-14 (Nov. 30, 1951). [In German] *cf.* B.I.P.C. 19: 708.

A brief reference is made to Erickson's new coating procedure. E.S.

PAPER—DEFECTS

LANDBERGE, M. J., SCHREIBER, P. R., and BEHRENS, H. H. Mechanical correction of two-sidedness. Tappi 35, no. 2: 49-53 (February, 1952).

Two-sidedness caused by coloring materials can be corrected by staining one side of the sheet at the size press. Other causes of two-sidedness are given as heterogeneity of fiber furnishes and loading materials. All these are accentuated by increased machine speeds and attendant higher vacuums. Various installations in use for correction of color two-sidedness in the United States and Canada are discussed in detail. It is shown that equipment which is simplest from the engineering standpoint often requires the most manual control. A suggested setup is given which demands a minimum of attention by the machine crew. The conclusion is reached that correction of color two-sidedness at the size press is feasible and necessary. 9 figures. E.S.

PAPER AND PULP INDUSTRY

ABELE, W. The pulp and paper industry in the United States of North America. Wochbl. Papierfabr. 79, no. 20: 641-3; no. 21: 675-6; no. 23: 758-61; no. 24: 803-6 (Oct. 31, Nov. 15, Dec. 15, 31, 1951). [In German] *cf.* B.I.P.C. 22: 308-9.

This is an extensive summary of the report by the Organization for European Economic Co-operation, including statistical data and 2 figures. E.S.

BULLOCK, WARREN. Imports shifts to specialties. Paper Trade J. 134, no. 8: 136 (Feb. 22, 1952); *cf.* B.I.P.C. 21: 479.

Import problems in general showed a marked increase in 1951 over 1950, and pointed up the increased importations of plasticized and other forms of impregnated papers. A progressive increase in imports of kraft paper from Canada is apparent, and imports of converter rolls of toilet tissue have increased rapidly. M.W.

BURKE, THOS. J. Sulphite Paper Manufacturers Assn. secretary's annual report. Paper Trade J. 134, no. 8: 56-7 (Feb. 22, 1952); Paper Mill News 75, no. 8: 112 (Feb. 23, 1952).

Orders received during 1951 were about 1.3% less than in 1950, whereas production increased approximately 1%. Shipments totaled the same in both years, but the net sales value of shipments in 1951 was $98,325,000, an increase of $16,900,000. Unfilled orders decreased 3.8% in 1951. No OPS regulation has yet been issued covering grades, but an advisory committee has been working on recommendations for price regulations and priorities. Under present regulations converters are unable to raise the price of waxed paper to meet the increased cost of waxing paper and, unless the present ceiling price is changed, a shortage of waxed paper may occur. No very great change in the demand for wrapping and converting papers in 1952 is anticipated. M.W.

CLAUSON, KARL A. Review of market pulp—1951. Paper Trade J. 134, no. 8: 140-2 (Feb. 22, 1952); Paper Mill News 75, no. 8: 116 (Feb. 23, 1952); *cf.* B.I.P.C. 21: 479.

Although consumer demand for market pulp exceeded supply for most grades, the nonintegrated mills were unable to exceed their 1950 operating records. The receipts of market pulp by the paper and board industry for 1951 totaled 2,814,635 tons, 3.5% less than for 1950. Of this total 46% came from domestic mills, 38% from Canada, and 16% from Scandinavia. Market consumption of pulp totaled 2,739,994 tons, 6% less than in 1950. Because of a world shortage, government restrictions limited the consumption and the inventories of market pulp during the last half of the year, and ceiling prices on domestic and Scandinavian pulp were also imposed. Several projected expansions are expected to contribute to the total supply of market pulp, and during 1952, supply is expected to catch up with demand, and a modification of government controls is expected. 1 table and 2 figures. M.W.

DOBROW, MORRIS C. Another paper production record. Paper Trade J. 134, no. 8: 96, 98-9, 102, 105 (Feb. 22, 1952); *cf.* B.I.P.C. 21: 479-80.

Following a discussion of the current economic situation, government regulations, and inflation, statistics on production in the paper industry during 1951 are presented. Paper and paperboard production amounted to 26,100,000 tons, an increase of 7% over 1950. A sizeable drop in the production of paperboard during the last half of the year prevented the total production from reaching an anticipated 27 million tons. Although no over-all data are available, it is estimated that total paper consumption increased 4-5%, which brings the per capita consumption to 390 lb., and a similar gain

may be expected during 1952. Productive capacity totaled 25,279,000 tons at the end of 1951, and facilities for producing an additional 1,200,000 tons are being built. Pulpwood consumption increased 8% over 1950, and inventories increased 25%. The supply of wood pulp was at record levels in 1951, but increased consumption prevented consumer inventories from exceeding practical working minimums. Supplies of unbleached kraft became ample, but the market for bleached pulps remained tight. Pulp imports from northern Europe were lower than in recent years, and this trend will probably continue because of increasing Canadian and domestic capacity. U. S. production of wood pulp increased 1,700,000 tons in 1951, and additional facilities will bring capacity to approximately 20,500,000 tons per year by 1953 or 1954. A continued defense program during 1952 will assure a high business level, and production and consumption rates of paper and board should remain high. 4 tables and 1 figure. M.W.

FOWLER, R. M. Pulp and paper keeps pace with Canada's industrial growth. Pulp Paper Mag. Can. 53, no. 1: 76-7, 80 (January, 1952); *cf.* B.I.P.C. 21: 480.

The Canadian production of all pulp and paper grades increased in 1951, and new records were attained chiefly by mill and machine improvements rather than by new capacity. During 1951 the trend toward greater diversification became more evident, and for every cord of wood which went into the production of newsprint, another cord went into the manufacture of pulp, paperboard, and paper. Newsprint distribution presented a problem because, although North American supplies are adequate, Europe has been unable to import adequate amounts because of monetary and exchange problems. However, emergency allocations have been devised. Export data for pulp and paper show substantial increases over 1950. M.W.

HILL, ALLAN C. Canada's market pulp industry. Paper Trade J. 134, no. 8: 143-4 (Feb. 22, 1952); *cf.* B.I.P.C. 21: 480.

Market pulp production during 1951 showed the most substantial growth in Canada's entire pulp and paper industry. Total production increased to 2.6 million tons, 21.6% higher than in 1950. Canada's total groundwood and chemical pulp shipments amounted to 2.3 million tons last year, a record which establishes Canada as the largest exporter of pulp in the world. This is an indication that Canada will supply a substantial part of the future fiber requirements of the rest of the world. Immediate expansion plans may be delayed by shortages of raw materials such as sulfur, chlorine, and steel, but much long-term development is anticipated. 2 tables. M.W.

ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION. U. S. southern kraft mills. Paper-Maker (London) 123, no. 1: 29-32, 34 (January, 1952).

A section of the complete O.E.E.C. report, "The pulp and paper industry in the U.S.A." (*cf.* B.I.P.C. 22. 308-9) is presented. It deals with the operation of typical kraft pulp, paper, and board mills in the southern United States. E.S.

PERRY, HENRY J. The effect of current expansion—1951-1955. Paper Trade J. 134, no. 8: 106, 108-9 (Feb. 22, 1952).

After the outbreak of the Korean War a program was developed for the construction of basic facilities with a minimum disturbance to the civilian economy, and $11.4 billion of plant expansion had been authorized under this

system by Nov. 30, 1951. About 5% of the total has been granted to the pulp and paper industry. Approximately 2,600,000 tons of new capacity in paper and board are planned for the period 1951-53, which would give the industry a rated capacity of 29-30 million tons. When considered percentage-wise, the increases for each type of paper do not exceed the normal trend, except for wrapping, tissue, and paperboard, and if demand continues to grow as in the past 15 years, no further capacity is required to meet the 1955 growth beyond that already authorized. Additional construction and the increased use of hardwoods promise an ample pulp supply from 1953 to 1955. If business drops off, selling will replace allocations, and the export market will probably consume any domestic surplus. 5 tables. M.W.

RITCHIE, JAMES L. United States wood pulp supply. Paper Trade J. 134, no. 8: 124, 126 (Feb. 22, 1952); Paper Mill News 75, no. 8: 100 (Feb. 23, 1952); Southern Pulp Paper Manuf. 15, no. 3: 76, 78 (March, 1952); *cf.* B.I.P.C. 21: 481.

The aggregate new supply of wood pulp in 1951 totaled 18,674,000 tons, 9% greater than the record 1950 supply. Growth in productive capacity, combined with the highest operating rates in the history of the domestic industry, brought the total wood pulp production in 1951 to 16,594,000 tons, which is 11% higher than in 1950. U. S. imports for 1951 were about equal to those of 1950, but exports were double the 1950 volume and totaled 195,000 tons. The U.S. wood pulp controls which became effective July 1, 1951, have resulted in a 1% lower supply of market chemical wood pulp from Scandinavia and North America, and the supply of paper grades of market chemical pulp has been 6% less than the 1950 rate of supply. However, sufficient tonnage was available in 1951 to support healthy conditions in converting mills and to permit inventories to increase by 18% over 1950. No increase in the world's market chemical pulp supply is expected during 1952. 2 tables. M.W.

PAPER AND PULP INDUSTRY—EDUCATION

ANON. Quebec's school of paper-making. Can. Pulp Paper Ind. 5, no. 2: 12-13, 34 (February, 1952); *cf.* B.I.P.C. 22: 422.

Essentially the same information is presented as in the previous reference. 7 illustrations. M.W.

BIRCHARD, W. H. Industrial training of technical men at undergraduate level. Pulp Paper Mag. Can. 53, no. 1: 78-80 (January, 1952).

A plan is outlined in which prospective technical personnel are given an apprenticeship training course during their undergraduate work. By utilizing summer vacations to instruct students in all phases of the industry, as part of their college course, they are given an opportunity to see if they like the field and to acquire a background which will qualify them for a responsible technical position upon graduation. M.W.

CITY AND GUILDS OF LONDON INSTITUTE. City and Guilds examinations in paper technology. Paper-Maker (London) 123, no. 1: 22-3, 26 (January, 1952); World's Paper Trade Rev. 137, no. 5: 335-6, 338 (Jan. 31, 1952); *cf.* B.I.P.C. 21: 566.

The regulations and syllabus for the 1951-52 session are given. E.S.

PAPER AND PULP MILLS

ANON. Celanese plans announced for Arrow Lakes district. Can. Pulp Paper Ind. 5, no. 2: 22, 24 (February, 1952).

Details of a proposed Arrow Lakes, B.C., development have been disclosed. Celgar Development Co., Ltd. (formed to represent Celanese Corp. of America) will begin construction of a $65 million project to provide for complete utilization of the forest resources of the area pending approval of a forest management license. Present plans call for the construction of a kraft mill that will produce 400 tons of bleached and semibleached sulfate pulp daily and a groundwood and paper mill with a daily capacity of 275 tons of newsprint. Plans for a plywood mill and a board mill are also under consideration, and studies are being made to determine the feasibility of recovering tannic acid from hemlock bark. The company has arranged for the purchase of a 500-acre plant site on the Columbia River near Castlegar. 1 map. M.W.

ANON. 1951 modernization at S. D. Warren Co., Cumberland Mills, Maine. Paper Trade J. 134, no. 9: 20-2, 24 (Feb. 29, 1952); Paper Mill News 75, no. 12: 56-8, 60 (March 22, 1952).

The expansion and modernization program is described, which was completed in 1951 and which resulted in an increased soda pulp production from 175 to 240 tons daily at the Cumberland mills. 8 illustrations. M.W.

CHEMICAL ENGINEERING. New plants and facilities underway in 1951. Chem. Eng. 59, no. 2: 175-85 (February, 1952).

A partial listing is presented of U. S. plants and facilities related to the chemical-process industries which were planned, under construction, or completed during 1951. A section of the list includes paper and pulp mills. M.W.

PAPER MILL NEWS. Brunswick completes $6,000,000 expansion. Paper Mill News 75, no. 7: 10-12, 14, 16, 18, 22 (Feb. 16, 1952); *cf.* B.I.P.C. 22: 424.

Essentially the same information as in the previous reference is given. 20 illustrations of the equipment. E.S.

PULP & PAPER. The new Lee mill; unusual features on new machine. Pulp & Paper 26, no. 2: 34-6, 38-40 (February, 1952); *cf.* B.I.P.C. 22: 122.

The new No. 3 Fourdrinier at the Lee Paper Co., which is equipped with a differential drive for the entire machine, and its auxiliary equipment are described. 16 illustrations. M.W.

VOORN, HENK. Present-day paper mills in Holland. Paper Maker [U. S.] 21, no. 1: 25-37 + 3 plates (1952).

A series of descriptions of the paper mills which are in production at the present time in Holland is presented. 1 table, 20 illustrations, and 1 map. M.W.

PAPER CONDITIONING

COLOMY, ROBERT. The science of paper conditioning. Graphic Arts Monthly 24, no. 2: 10, 12, 14, 16, 18 (February, 1952).

The author discusses the importance of maintaining a specified moisture content in paper in order to avoid dimensional changes in the sheets and the accumulation of static electricity. The scientific controls which can be employed to measure and adjust the moisture content of paper, such as the sword hygroscope and the Southworth paper conditioner, are mentioned. 3 illustrations. M.W.

PAPER MANUFACTURE

CHEMICAL ENGINEERING. New processes and technology, 1950-51. Chem. Eng. 59, no. 2: 185-90 (February, 1952).

New developments in the pulp and paper industry are included in a listing of improvements in processes and technology which were introduced or commercialized during 1950-51. M.W.

EDGE, S. R. H. Pulp and paper. Repts. Progress Applied Chem. 35: 513-24 (1950); *cf.* B.I.P.C. 21: 413.

The author reviews the technical advances in the production of pulp and paper which occurred during 1950. 70 references. M.W.

PAPER SIZING

BACK, ERNST. The phase composition of aluminum di-abietate-abietic acid co-precipitates. Svensk Papperstidn. 55, no. 2: 49-51 (Jan. 31, 1952). [In English; German and Swedish summaries]

The precipitation of resin acid soaps by alum, as in the sizing of paper with rosin, yields precipitates which can be separated into aluminum diabietate and free abietic acid (*cf.* B.I.P.C. *22*: 189). Phase studies of abietic acid-aluminum diabietate coprecipitates were made, using anhydrous acetone as a selective solvent for the removal of abietic acid. It was shown that the aluminum diabietate and the abietic acid exist in the solid as separate phases. 3 figures and 5 references. B.L.B.

GOLOVANOV, N. G. Lignite bitumens and their use in the paper industry. Bumazh. Prom. 25, no. 4: 22-3 (July-August, 1950). [In Russian]

A discussion is devoted to the use of lignite bitumens as paper sizes, either as a raw material or as a refined extract. 1 table. E.G.S.

HANSEN, OTTO. Synthetic products for the beater sizing of pulp. Das Papier 6, no. 1/2: 10-18 (January, 1952). [In German]

A review is presented of the development of synthetic beater sizes in Germany since 1935, which can be prepared from raw materials available in that country in sufficient quantity under normal conditions and which are at least equal in their sizing effects to the customary rosin size. In addition to Diels-Alder maleic anhydride addition products, these sizes consist principally of condensation products of the Friedel-Crafts reaction of polycyclic, hydrogenated, aromatic hydrocarbons or alkylated benzenes with phthalic anhydride. 26 references, chiefly to patents and patent applications. E.S.

SUNNBERG, TAGE G. Tall oil pitch, some aspects regarding its use as a paper size. Svensk Papperstidn. 55, no. 1: 15-18 (Jan. 15, 1952). [In Swedish]

Tall oil pitch (I) is obtained in fairly large quantities during the distillation of tall oil (about 25-30%). Reference is made to Scandinavian attempts which extend as far back as 1941 to utilize the material as a paper size. The results were encouraging and, with a fully saponified (I) size, resembled those of Delthirna size. However, complete saponification is a prerequisite, or pitch troubles and plugging of the wires will result. A method for preparing paper size from (I) delivered in drums at the Swedish sulfate mill in Bergvik was developed. The procedure and installations used in the manufacture of kraft paper and board are described briefly; it was at first believed that the sizing method could be used only in combination with Yankee machines, but results with cylinder machines have been equally satisfactory. The economic advantages for the Swedish kraft paper and board industry are pointed out, which could replace a considerable portion of imported dark wood rosin with a much less expensive domestic product. 3 tables and 2 diagrams. E.S.

VOYUTSKIĬ, S. S., FILIPPOVA, N. K., and ZOTOVA-SPANOVSKAYA, N. P. Role of electrolytes in sizing. Bumazh. Prom. 25, no. 4: 8-12 (July-August, 1950). [In Russian]

In a discussion of the influence of electrolytes on sizing baths and sized materials, data are presented on the pH, relative viscosity, and critical concentrations of aqueous 5% G-54 latex solutions containing various electrolytes (e.g., sodium carbonate, bicarbonate, and chloride). Tabular information is also included on the sorption of electrolyte-containing latex solutions by cotton fibers and chrome-tanned leather fibers. 4 tables and 7 references. E.G.S.

PAPER SPECIALTIES

BEEMAN, LYMAN A., JR., Groundwood printing paper manufacture. Tappi 35, no. 2: 90-3A (February, 1952).

The advantages of groundwood specialty papers are outlined which are manufactured by Finch, Pruyn & Co., Glens Falls, N.Y. for different printing purposes. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 23. (Parts 1 and 2). A survey of envelope making, sizes, and some essential factors. World's Paper Trade Rev. 137, no. 1: 11-12, 14; no. 3: 178-80 (Jan. 3, 17, 1952); *cf.* B.I.P.C. 22: 425.

The history of the envelope and the development of machinery in place of manual operations are described in the first part of the article; the second part deals with recent progress in machinery, some special sizes used for direct-mail purposes, and the packaging of envelopes. 9 figures. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 24. Some desirable features in paper surface for various printing processes. World's Paper Trade Rev. 137, no. 5: 292, 294, 296 (Jan. 31, 1952).

The article is essentially a plea for all-around co-operation between the papermaker and printer or converter. 2 illustrations. E.S.

DAY, FREDERICK T. Paper conversion and usage. No. 25. The manufacture of carbon paper. World's Paper Trade Rev. 137, no. 7: 474, 479-80 (Feb. 14, 1952).

The author describes the three principal components of a carbon paper (vehicle, coloring agents, and body tissues), the coating operation, and the six basic grades (typewriter grades, pencil and pen qualities, specialized carbon papers, hectograph and copying carbons, carbonized printings, and single-use carbon papers) and their applications. Factors which should be considered in the selection of carbon papers include the number of copies required; the quality and weight of the stationery used; the special requirements, age, state of repair, and cleanliness of the machine; the hardness of the pencil or pen used; and the touch of the typist. 2 illustrations. E.S.

DOWNS, M. L. Glassine papers for the paper boxboard industry. Tappi 35, no. 2: 106-8A; discussion: 110-12A (February, 1952).

The manufacture and testing of glassine and greaseproof papers are outlined briefly, and methods of lamination with boxboard and applications in the setup and folding-box fields are described. E.S.

L. E. Metallic papers. Allg. Papier-Rundschau no. 24: 1038 (Dec. 31, 1951). [In German]

The two processes for the manufacture of metallic paper are outlined: the lamination of metal foils to the base paper and the dusting or coating with metal powders. The prime requisite for the base paper is freeness from acids, alkalies, and chlorine, since even traces will cause discolorations of the finished products sooner or later; in addition, a smooth, closed surface and good size resistance are essential. Applications include decorative and functional wrapping papers, labels and seals, bookbindings, and wallpaper; its experimental use as a building paper for heat insulation has recently been tried and proved successful. E.S.

LAHAISE, T. F. Characteristics of no. 2 hanging paper. Tappi 35, no. 2: 95-6A (February, 1952).

The desirable properties of the raw stock for wallpaper are discussed. E.S.

LAVERY, HUGH H. Printing papers. Tappi 35, no. 2: 93-4A (February, 1952).

The special use requirements of groundwood printing papers for the letterpress, gravure, and lithographic processes are outlined briefly. E.S.

LUEY, A. T. Survey of greaseproof boards and papers. Tappi 35, no. 2: 112-15A; discussion: 118A (February, 1952).

A general survey is given of the grease-resistant materials normally used in conjunction with folding boxes, including greaseproof paper, glassine, parchment, cellophane, cellulose acetate, coatings, and synthetic resin films and coatings. A table is included which gives the sales price and the cost per 1000 sq. ft. of the various grease-resistant materials. The problem of curling caused by greaseproof and glassine papers is listed as the principal incentive for the search for other materials and substitutes to be used in boxboard laminations. 1 table and 4 references. E.S.

RAUSCHER, NORMAN L. Waxed paper. Tappi 35, no. 2: 94-5A (February, 1952).

The manufacture of nonporous, transparent waxed paper by wet waxing is outlined; dry waxing and opaque waxing are also mentioned. E.S.

SANBORN, AUSTIN W. What is heat seal labeling? Fibre Containers 37, no. 2: 112 (February, 1952).

Heat-seal labeling techniques include the simultaneous application of heat and pressure to a thermoplastic-coated label paper or the application of heat to a delayed-tack type of thermoplastic-coated paper and subsequent positioning on the label surface by means of pressure. Some packaging materials can be labeled only with thermoplastic adhesives, and it is predicted that eventually heat-seal labeling will be the general and accepted method for all labeling work. M.W.

SEIDL, ROBERT J. Handmade paper in Japanese culture. Paper Maker [U. S.] 21, no. 1: 1-12 (1952).

In Japan handmade paper is preferred for many uses, and the industry, which in large measure is carried on by farmers as an off-season activity, continues to flourish. The uses and process of manufacture of the handmade papers are described. 26 illustrations. M.W.

SPANNUTH, H. T. A consumer's viewpoint of greaseproof requirements. Tappi 35, no. 2: 115-18A; discussion: 118A (February, 1952).

The author emphasizes the existence of the great variety of fatty products with different greaseproof requirements and discusses the correct approach to adequate protection by packaging. By studying the life histories of a product, the controlling factors will become known. Greaseproofness can be increased by concentrating on the improvement of the weak areas of corners, closures, and structural supports (to prevent pressing out of the oil). Objectionable odors should be blocked and the development of the peroxide effect be prohibited. Light exposure should be restricted to a minimum. The economic aspect must be borne in mind when hermetically sealed packages and nitrogen filling are considered. Sometimes difficulties may be caused by inert enclosures, such as board dividers in a cooky package or a printed insert advertisement. The histories and weak links in the handling of the products must be analyzed to provide more basic data for working out satisfactory solutions in the laboratories. E.S.

SPILLER, W. S. The finished properties of toilet tissue. Tappi 35, no. 2: 96-7A (February, 1952).

The desirable characteristics of toilet paper for consumer acceptance involve a well-balanced combination of utility, comfort, and appearance. The proper use of the correct blend of raw materials is fundamental. Groundwood is one of the essential components, although its low brightness and high dirt and shive count establish an upper limit on the percentage which can be incorporated. E.S.

TAYLOR, H. W. Introduction to heat seal labeling. Fibre Containers 37, no. 2: 108, 110, 112 (February, 1952).

Thermoplastic adhesives have the following selling values: the labels are neat and clean; they have a high degree of permanency on flexible as well as rigid surfaces and can withstand extremes in temperature and humidity; they permit precision registration; and the label paper has complete adhesive coverage at all corners and edges of the label. The production values of thermoplastics include convenience and versatility. They are subject to three variables, time, temperature, and pressure, but with the proper control of

these factors, the adhesives may be used successfully on a wide range of surfaces. M.W.

TOTTEN, A. I., JR. Aluminum foil-paper laminates. Tappi 35, no. 2: 109-10A; discussion: 110-12A (February, 1952).

The author describes some of the many aluminum foil-paper laminates used in the packaging field, including butter and margarine wraps, bottle labels, containers (envelopes) for dehydrated and powdered foods, outside wraps for canisters, cigarette carton overwraps, inner or outer linings for folding boxes, etc. Practically the entire range of papers can be employed for such laminations (kraft, bonds, lithos, tissues, groundwood papers, glassines, and parchment); the field is almost limitless. E.S.

TOURNOUX, P., and PRAT, J. Description of a new combustibility test for cigarette papers. Bull. assoc. tech. ind. papetière 5, no. 7: 378-83 (November, 1951). [In French]

Following a brief reference to current combustibility methods, a new procedure for the evaluation of this property of cigarette papers is described. It consists of winding tubes of cigarette paper upon a machine under standardized conditions, placing a series of 10 tubes each upon a circular support which holds them at an angle of 45 degrees, placing the support in an oven with a glass window (to eliminate drafts) and, after waiting 10 minutes to allow the tubes to reach equilibrium with the oven temperature of 40°C., igniting the tubes by means of a wick introduced through the chimney of the oven. The time required for the burning of a length of 5 cm. of the tubes is taken as a measure of the paper's combustibility. Highly combustible papers were found to require from 51 to 66 seconds; less combustible papers, from 77 to 85 seconds; and poorly combustible papers, 107 seconds. The method is claimed to be accurate, sensitive, and reproducible. Some of the results are presented in tabular form. 5 tables and 2 illustrations. E.S.

TOURNOUX, P., and PRAT, J. Study of combustion supporters and fillers for improving the combustibility of cigarette paper. Bull. assoc. tech. ind. papetière 5, no. 7: 410-18 (November, 1951). [In French]

Following a brief review of the rather scant literature on fillers and combustion supporters used in the manufacture of cigarette paper, the authors discuss the desirable properties of additives for improving combustion, including the formation of a ring on the burning edge, absence of bad taste, low price, and simple application without ill effects on the other components of the paper or the tobacco. The combustion temperature of a cigarette paper was measured by observing the fusion temperature of sodium silicate in the paper, by means of a Chromel-Alumel thermocouple, or by a micropyrometer. For untreated papers a combustion temperature of approximately 800°C., and for papers treated with additives, of approximately 750° was found. The maximum temperature of the paper attained during the actual burning of a cigarette, studied on two samples, is assumed not to exceed 1000°. The ring formation during burning was studied under a "Nachet" stereoscopic magnifying glass (magnification of 50). First, the condensation of tar was observed, then its redistillation, and finally carbonization, followed by a more or less complete combustion. In conclusion, a brief reference is made to the results of experiments with different siliceous fillers (bentonite, kieselguhr), mineral fibers (glass, asbestos), combustion catalysts, and chlorophyll. A list of chemicals which exert an influence upon the decomposi-

tion of cellulose, taken from a paper by Taylor and Pollok (*cf.* Fuel 28: 77-87 [1949]), is included. 3 figures and 19 references. E.S.

PATENTS

WEST, CLARENCE J. United States patents on papermaking, third quarter, 1951. Tappi 35, no. 2: 121-6A (February, 1952); *cf.* B.I.P.C. 22: 426.

A list of U. S. patents on papermaking for the third quarter of 1951 is presented. E.S.

WEST, CLARENCE J. United States patents on papermaking, fourth quarter, 1951. Tappi 35, no. 2: 126-32A (February, 1952).

A list of U. S. patents on papermaking for the fourth quarter of 1951 is presented. E.S.

PER CAPITA CONSUMPTION

STEVENSON, LOUIS T. Cycles in per capita consumption of paper. Paper Trade J. 134, no. 8: 130, 132, 134 (Feb. 22, 1952).

In 1951 U. S. consumption of paper is estimated at 30,700,000 tons or 68% of the world total. This amounts to 390 lb. per capita, compared with a per capita consumption of 260.4 lb. in 1950 for Canada, 70 lb. for France, 10 lb. for Russia, and 2 lb. for China. The U. S. totals for the years 1915 to 1950 for over-all per capita consumption and for the major grades are plotted, and the trends are analyzed. The normal growth is upward, more sharply in some grades, e.g., paperboard, and the trend may be used to judge the adequacy of plans for future capacity. By extrapolating to 1955 and taking into account the anticipated increase in population, a total consumption of paper and board of between 24,464,000 and 33,935,000 tons is indicated for 1955. 3 figures. M.W.

PHYSICAL TESTING—INK

WALKER, W. C. The testing of printing inks. Am. Ink Maker 30, no. 2: 34-6, 66-7 (February, 1952).

The author discusses some of the properties which must be considered in the evaluation of a printing ink, including color, fineness of grind, flow properties, drying time, rub resistance, and permanence. The available means for testing these properties are mentioned, and in several cases the need for additional research to find a definite measurable correlation between the properties and actual press performance is stressed. 1 illustration. M.W.

PHYSICAL TESTING—PAPER—ABSORPTION

ARLOV, A. P. Effect of surface roughness on rate of water absorption in paper. Norsk Skogind. 5, no. 12: 403-8 (December, 1951). [In English; Norwegian summary]

The influence of variations in the surface roughness of paper on its rate of water absorption was studied. Sized and unsized handsheets were formed from a bleached sulfite pulp beaten in a Valley beater and P.F.I. and Lampén mills. The specific volume, surface roughness, and decrease in contact angle per second were measured. The results showed that a sized paper with an initial contact angle exceeding 90° absorbs water at a slower rate the rougher the surface and the bulkier the sheet. In an unsized paper, on

the other hand, the rate of water absorption is greater the rougher the surface and the bulkier the sheet. A summary of the general theory of the contact angle (its measurement and hysteresis and the movement of liquids in capillaries) is given, and the present results are interpreted in terms of the effect of contact angles on the movement of liquid in conical capillaries. Seven beater-sized commercial paper brands with a pronounced two-sidedness in both rate of water absorption and surface roughness were examined, and their rate of water absorption was found to be greater on the smoother side. This is in accordance with the laboratory experiments. 2 tables, 8 figures, and 6 references. E.S.

PHYSICAL TESTING—PAPER—MOISTURE

HART, JOHN A., and WELLS, DAVID J. A conditioning cabinet with precisely controlled and readily adjustable humidity. Pulp Paper Mag. Can. 53, no. 1: 95-8 (January, 1952).

Following a discussion of the changes in physical properties of paper and other materials with atmospheric humidity, and the measurement of these changes, the construction of a conditioning cabinet is described which was designed for the measurement of the properties of paper at various humidities. The surface-film electrical-resistance hygrometer (*cf.* B.I.P.C. 10: 382-3) is used as the humidity detector. The basic cabinet is a domestic refrigerator made of sheet steel and insulated with wallboard. A motor-driven fan provides air circulation, and a thermostat is employed for temperature regulation. Dry air is introduced directly from a compressed-air line at less than 10% R.H., and solenoid valves control the introduction of moist air which is obtained by mixing air with live steam. Regulation over the range of 10-75 ±0.5% R.H. was obtained, and desired humidity could be attained and held constant within five minutes. Paper samples came to equilibrium with the circulating air within about five minutes. The results of measurements of moisture content, electrical conductivity, and curl of paper are presented to illustrate the use of the apparatus. 6 figures and 1 reference. M.W.

PHYSICAL TESTING—PULP—SAMPLING

PADÉ, P. Contribution to the study of moisture determinations in pulp bales, and discussion of the methods actually employed or proposed. Bull. assoc. tech. ind. papetière 5, no. 7: 392-400 (November, 1951). [In French] *cf.* B.I.P.C. 22: 38.

On the basis of his experiments with mechanical pulp (studies still in progress) and wet and dry chemical pulps with the wedge, diagonal, and diagonal-axis methods of sample taking and a comparison of the results with the actual moisture contents of the bales from which the samples were taken, the author concludes that the results obtained with all three methods deviate more or less from the theoretical value, but still fall within the limits (±0.5%) of permissible tolerances. 11 diagrams. E.S.

PHYSICAL TESTING—WAXED PAPER—SEALING STRENGTH

PADGETT, JOHN W., YERMAKOFF, E. A., and VAN ESSELSTYN, S. T. Evaluation of waxed-paper seals. Modern Packaging 25, no. 6: 121-9 (February, 1952).

A method for the determination of sealing strength of paraffin wax and a modification for testing the laminating strength of microcrystalline wax are described. Wax is applied to a standard opaque sulfite paper in a controlled

amount. Two sheets are sealed together and aged at 73°F. and 45-55% R.H. for 24 hours. The test specimens are then prepared and peeled apart at a constant predetermined rate on a Moore & Munger-Palo sealing-strength tester. The tester consists of a mercury buoyancy tube and yoke assembly, a recording drum, and a drive assembly. A graphical plot is obtained and evaluated. The sealing strength is expressed in g./cm. of width of sealed specimen. With a few modifications, the procedure for determining the laminating strength of microcrystalline wax follows that of the sealing-strength method; glassine paper is used in this case. An analysis of the effect of the paper stock shows that sulfite paper can contribute as much sealing strength as the wax coating itself, whereas the effect of paper stiffness on sealing strength was found to be negligible. Of all the sealing variables which affect sealing strength, temperature is probably the most important, with the possible exception of rate of chilling. With the exception of very low rates, as the peeling rate increases, the measured sealing strength increases linearly; it also increases with an increase in humidity. When the wax composition, except for oil content, is known to be constant, there is a correlation between tensile strength and sealing strength of paraffin wax. This method is shown to give adequate reproducibility and fair correlation with commercial practice. 7 tables, 13 figures, and 8 references. M.W.

PLASTIC FILMS (NONCELLULOSIC)

ANON. A look at the vinyls. Modern Packaging 25, no. 6: 79-85 (February, 1952).

Some recent applications of the vinyl nitrile and vinyl chloride types of plastics (unsupported films and sheet materials) in the packaging field are described. 16 illustrations. M.W.

PLASTICS

GRAY, V. R., HAWARD, R. N., *and others*. Plastics. Repts. Progress Applied Chem. 35: 568-619 (1950); *cf.* B.I.P.C. 21: 416.

Members of the Plastics Group of the Society of Chemical Industry present the following reviews of the developments during 1950: Gray, V. R., and Haward, R. N. Polymerization products—212 references, p. 568-87; Finn, S. R. Polycondensation products—116 references, p. 588-607; Parkin, T. N. Plastics from natural polymers—112 references, p. 607-19. M.W.

PREHYDROLYSIS

CENTOLA, GERMANO, PANCIROLLI, FRANCESCO, and BORRUSO, DOMENICO. Characteristics of prehydrolyzed celluloses. Ind. carta (Milan) 6, no. 1: 1-7 (January, 1952). [In Italian; French and English summaries]

The authors studied the effects of prehydrolysis (accomplished by different procedures) before cooking different dissolving pulps (spruce, beech, and straw) by the sulfate process. In other experiments the complete purification of the pulps was attempted by different treatments after the sulfate cook; these, however, gave practically negative results. With prehydrolysis, on the other hand, and particularly autohydrolysis with its uniform action on the vegetable matter, very satisfactory results were obtained, even when applied to raw materials not suitable for the manufacture of dissolving pulps. Control methods for the resulting pulps are described, particularly for evaluating their suitability for conversion by the viscose and acetate processes. The sulfate pulps obtained with prehydrolysis were found to resemble cotton linters in many respects; their molecular chain distribution (polymolecularity)

is much more uniform than that of pulps produced by the sulfite process. The experiments show that, with prehydrolysis and sulfate cooking, it is possible to eliminate the nonuniformity of the pulps which originates from the natural heterogeneity of the raw materials. The possibilities of cooking mixtures of different raw materials simultaneously are also considered. 10 tables, 3 figures, and 17 references. E.S.

PRINTING AND PRINTER'S INK

UNTEUTSCH, WERNER. Naturally quick-drying printing inks and paper. Allg. Papier-Rundschau no. 24: 1037 (Dec. 31, 1951). [In German]

Reference is made to quick-drying printing inks which do not depend upon the addition of metal driers, but which are so formulated that the inks gel on contact with the paper surface, whereas they remain fresh and without skin formation in the fountain, even on longer standing. These inks should not be used in connection with parchment, glassine, cellophane, or foil papers; in the case of very hard-sized or highly calendered papers, the gelling process will be retarded. However, they are suitable for a large number of papers and boards, particularly coated and chromo papers. Several colors may be applied in succession, even at intervals of several days or weeks. Special reference is made to the German "Prestoprint" inks of Gebr. Hartmann, the color intensity of which is claimed to surpass that of American products hitherto considered superior in every respect. It is self-evident that for best results the correct understanding and co-operation of the printer is also required in their use. E.S.

PULP AND PAPER—IMPURITIES

MINUTE, ARTHUR. Modern methods of cleaning paper stock. World's Paper Trade Rev. 137, no. 5: 321-6, 331-5 (Jan. 31, 1952); Paper-Maker (London) 123, no. 2: 122-22b, 124, 127-8, 132-3, 135, 140 (February, 1952).

The author reviews current methods of cleaning paper stock including, after a brief reference to rifflers or sand traps, centrifugals of the revolving basket or vortex types, rotary screens, and appliances for fiber recovery from screen tailings. Cleanliness is implicit in quality, as even a speck or two of dirt may turn a high-quality sheet into poor paper. The most effective way of meeting the problem at present is by: alert defensive work in the earliest stages (during entry, storage, preparation, and handling of the raw materials); prevention in so far as possible of internally created dirt arising from piping, chests, and in other ways; preseparation, if necessary, before the stock is passed to centrifuges or screens; the use of dirt-elimination equipment of adequate capacity (centrifuges or screens); the use, in the case of high-grade papers, of a combination of revolving-basket and vortex-type centrifuges; the use of low stock consistencies during screening or centrifuging; and maintenance of the cleaning equipment in an efficient, clean state. 1 table and 11 figures. E.S.

PULP MANUFACTURE

SANDERMANN, WILHELM. The Swedish pulp, groundwood, and paper industry. Wochbl. Papierfabr. 79, no. 23: 765-6, 768-9 (Dec. 15, 1951). [In German]

This is an excerpt of the author's book on the present status of the Swedish forest industries, in which he deals with continuous and chlorine

dioxide bleaching, spent sulfite liquor evaporation and combustion, recovery in sulfate mills, and the continuous Kamyr cooking process. 6 illustrations. E.S.

RAGS

GOLDMAN, HARRIS. New cotton cuttings and 1952. Paper Trade J. 134, no. 8: 135 (Feb. 22, 1952).

As a papermaking raw material, cotton cuttings, unbleached cuttings in particular, have been in a commanding market position, and this situation is likely to continue in 1952. M.W.

RAW MATERIALS

LATHROP, ELBERT C. The characteristics of pulp fibers from agricultural residues. Northern Regional Research Laboratory AIC 323: 12 p. (January, 1952).

The chemical, physical, and pulping properties of straws and esparto, canes and reeds, woody stalks with bast fibers, leaf fibers, and bamboos are outlined. Research has shown that these agricultural fibers can be used in papermaking, not only to expand existing pulp supplies but also in the production of new and improved paper and board products. 3 tables and 1 figure. M.W.

RAYON—STATISTICS

TEXTILE OR'GANON. Annual rayon review. Textile Or'ganon 23, no. 2: entire issue (February, 1952); *cf.* B.I.P.C. 21: 489.

The total 1951 U. S. rayon and acetate production reached a record level of 1,294,200,000 pounds; rayon production was 6% over 1950, but acetate was 3.5% lower. World rayon and acetate production in 1951 is estimated at 3,960,000,000 pounds or 13% over the previous record in 1950. Yarn output at 2,120,000,000 and staple at 1,840,000,000 pounds were up 10% and 17.5%, respectively, over 1950. Additional data on domestic and foreign production and consumption are presented in supplementary tables and graphs. M.W.

RAYON—VISCOSE PROCESS

HERMANS, P. H., and HEIKENS, D. Correlation between sensitivity to acid hydrolysis and skin-core differentiation in viscose rayon. J. Polymer Sci. 8, no. 2: 187-90 (February, 1952).

Comparative determinations of the sensitivity of various rayons were made. Rayons with almost the same degree of crystallinity as determined by the x-ray method exhibited wide differences in the percentage of residue after hydrolysis. However, a definite correlation was found between sensitivity to hydrolysis and the presence of a skin-core differentiation; rayons with a typical skin are less resistant to hydrolysis than those without, and the percentage of undissolved residue seems to decrease with increasing thickness of the skin. 1 table and 7 references. M.W.

SCHERER, PHILIP C., and CHINAI, SURESH N. Effect of initial sulfur-cellulose ratio on that of viscose syrup at maturity. Rayon and Synthetic Textiles 33, no. 2: 38, 41-2 (February, 1952); *cf.* B.I.P.C. 9: 83, 317; 10: 132.

An investigation of the effect of the initial sulfur-cellulose ratio of xanthates on the viscose sirups showed that the sulfur-cellulose ratio of a viscose depends on the initial ratio of the xanthate crumbs and that the sulfur-cellulose ratio at maturity also depends on the initial ratio. There apparently is no tendency for sirups with different initial ratios to have the same ratio when an ammonium chloride number of 10.0 is reached. This variation in the maturity ratio may have a bearing upon the properties of the sirups and the rayon spun from them. 6 tables, 2 figures, and 6 references. M.W.

REPORTS—PREPARATION

LIEBERT, ERHARD. Technical reports, their preparation, and factors of significance. Wochbl. Papierfabr. 79, no. 22: 711-13 (Nov. 30, 1951); 80, no. 1: 7-9 (Jan. 15, 1952). [In German]

The author quotes Campbell's article "The organization of reports" (*cf.* B.I.P.C. 21: 800) in full and discusses the importance of technical periodicals for keeping informed of new developments. The standard handbooks are usually outdated by 20 years or more and, with the exceedingly rapid progress of new techniques, few handbooks will be published in the future. In their place, the reference books will consist of card catalogs which can be kept reasonably up to date by the insertion of new cards which will be prepared by information centers. In conclusion, brief directions for the statistical evaluation of data in reports are given. 1 table, 3 figures, and 6 references. E.S.

RESEARCH

BETTENDORF, HARRY J. Technical personnel is expensive. Fibre Containers 37, no. 2: 54, 59-60, 62 (February, 1952).

The corrugated box industry has undergone a tremendous expansion since 1919, and its present size and continuing growth do not permit the use of empirical, rule-of-thumb methods for determining box efficiency. The future growth of the industry lies in an intelligent technical approach in which corrugated board is regarded as a raw material that may have unlimited uses. Good technical development depends on an understanding of company policies and co-operation between management and technical personnel so that research is directed at the solution of practical problems which will be of economic benefit to a company. 4 tables. M.W.

BRYDE, ØYVIND. The international chemical pulp conventions in Appleton and Montreal. Norsk Skogind. 5, no. 12: 417-21 (December, 1951). [In Norwegian]

A brief illustrated review of the meetings is given, with particular emphasis on some of the technical arrangements, such as a large number of short papers with limited discussion periods, the installation of microphones in strategic locations, and panel and round-table discussions. The holding of this type of meeting in Scandinavian countries and their general value are considered. 17 illustrations. E.S.

ELMENDORF, ARMIN. Fifteen wood wonders since 1921. Wood 57, no. 1: 26-7, 60-1 (January, 1952).

A survey of 15 wood products developments which were not in existence prior to 1921 is presented. The problems which these products presented in 1920 are analyzed, and their status in 1951 is reported. The developments are:

insulation board, hardboard, wood-fiber insulating blankets, wood fiber insulating fills, weatherproof adhesives, fire-resistant fiberboards, wood defibration, flexible wood-wall coverings, hot gluing with cold plates, stressed skin construction, metal-clad plywood, compounding lumber, bark utilization, and sawdust and shaving utilization. 4 illustrations. M.W.

NISSAN, A. H., and UNDERHAY, G. F. Research and the paper industry in Britain to-day. Paper Making and Paper Selling 70, no. 4: 36-41 (Winter, 1951-52); World's Paper Trade Rev. 137, no. 1: 41-4 (Jan. 3, 1952).

Following a brief survey of the development of papermaking, the various fields of current fundamental research and industrial development are reviewed and evaluated. The authors suggest that, since there is a correlation between the progress of applied original work and fundamental research in other countries, applied research and industrial development in England would be benefited by the encouragement of fundamental research in universities, by research associations, and in industrial mills, factories, and laboratories. 43 references. M.W.

RESEARCH LABORATORIES

BLOM, CHRIS. Forest Products Research Laboratory, the center for British wood research. Norsk Skogind. 5, no. 12: 422-4 (December, 1951). [In Norwegian; English summary]

The facilities and activities of the laboratory at Princes Risborough in the vicinity of London are described briefly. E.S.

BRITISH PAPER AND BOARD INDUSTRY RESEARCH ASSOCIATION. Progress of Research Association; official opening of rebuilt headquarters expected in June. Its relation to the industry. World's Paper Trade Rev. 137, no. 5: 299-300; no. 6: 372, 374, 376, 393 (Jan. 31, Feb. 7, 1952).

The Association held its eighth general meeting on January 17, 1952. The activities and developments during the past year are reviewed. E.S.

EVANS, JOHN C. W. Institute's revitalization sets pace for constructive future. Pulp Paper Mag. Can. 53, no. 1: 64-73 (January, 1952).

The author presents a report of the Pulp and Paper Research Institute of Canada, including a summary of research activities and its educational, testing, and information facilities. 15 illustrations. M.W.

OLIN INDUSTRIES, INC. Research laboratories dedicated to creation of new and improved packaging films. Packaging Parade 20, no. 229: 68-9 (February, 1952).

The new Olin Cellophane Division, which is located at Pisgah Forest, N.C., will test the properties and the packaging applications of cellophane, polyethylene, and other films. The research and development laboratories at New Haven, Conn., will carry on research aimed at the improvement of existing films and the development of new ones. Some of the equipment of the laboratories is described. 9 illustrations. M.W.

RESIN, SYNTHETIC

ROCHOW, T. G., and STAFFORD, R. W. Coatings. Anal. Chem. 24, no. 2: 232-7 (February, 1952); *cf.* B.I.P.C. 21: 490.

A review is presented which covers chemical and physical analytical methods applicable to organic high polymers and associated oils, waxes, pigments, and plasticizers, as disclosed in the literature during the past year. 158 references. M.W.

SAFETY

MILNE, J. M. How we put hard hats and safety boots on our workers. Pulp Paper Mag. Can. 53, no. 1: 150, 152-3 (January, 1952).

An effective method for persuading workers to wear safety shoes and hats is described. By permitting employees to purchase them at the personnel office for cost, it has been possible to overcome the resistance to wearing them at both employee and supervisory levels. M.W.

NATIONAL SAFETY COUNCIL. Safe practices in folding box manufacture. Boxboard Containers 70, no. 710: 10-12 (February, 1952); *cf.* B.I.P.C. 22: 356.

Examples of good safety practices and staged illustrations of unsafe practices are presented in a series of photographs taken at the Chicago Carton Co. and the Ace Carton Corp., Chicago. 16 illustrations. M.W.

SOUGHTON, F. O. Selling safety to the worker in the woods. Paper Ind. 33, no. 11: 1322-5 (February, 1952).

Reference is made to the fact that woods operations present particular hazards and that problems of supervision, piece work, and isolation are present; this is indicated by the much higher accident rate in the bush. For every man killed in the mill, there are 26 men killed in Ontario woods, based on actual man-hours worked, and 25 men suffer lost-time accidents in the woods for every man injured in the mill. The author emphasizes that this is principally due to inadequate accident-prevention efforts resulting from misconceptions, disinterest, lack of a basic philosophy of prevention, or methods utilized. To show what can be done in planning a safety program, the methods employed at the LongLac sulfate mill during the start-up are outlined. Previously, disabling injuries at the starting up of new sulfate mills in Ontario occurred once every four or five days during the first two or three years of operation; the concentrated efforts of all mill personnel at LongLac reduced this rate to 18 during the first year of operation (an average of one every 20 days); this is believed to be the safest pulp-mill start-up on the continent. During the second year of operation, disabling injuries were cut to eight (an average of one every 45 days). A similar philosophy and determination as this mill employed is required in dealing with woods accidents to bring forth results. E.S.

SEMI-CHEMICAL PULPING PROCESS

ANON. Semi-chem made for sale. Pulp & Paper 26, no. 2: 92 (February, 1952).

Veitsiluoto Osakeyhtiö, Veitsiluoto, Finland, is an example of a mill which is making semichemical market pulp for export. The equipment of the pulp

mill includes an eight-pipe Chemi-Pulper continuous digester, an Asplund defibrator, and a Sprout-Waldron refiner. Most of the equipment in the mill is made from stainless steel so that either acid or alkaline cooking liquors may be used. 1 illustration. M.W.

GREEN BAY PAPER & PULP CO., *Green Bay, Wis.* Caustic pulping shows promise. Chem. Eng. 59, no. 2: 268, 270 (February, 1952).

A cold caustic pulping process is under development which produces pulp which, in combination with standard neutral semichemical pulp, can be used for corrugating medium. In the process wood chips are soaked in 2.5% caustic liquor at room temperature for 2-3 hr. The excess caustic is stripped from the softened chips with steam, and they are then fed to a refiner. Pulp yields are frequently as high as 90%. 1 flow diagram. M.W.

SHIPPING CONTAINERS

ANON. Work-saving cartons. Modern Packaging 25, no. 6: 90-1 (February, 1952).

A one-piece retail apple carton that can be set up and filled without stapling, gluing, or the use of special equipment is described. The die-cut, preprinted packer is supplied in the form of a flat blank of corrugated board. When the scored ends of the blank are brought together, two die-cut strips of the carton snap into position to form the carton ends. The apertures left by the pushed-out strips become windows for displaying the fruit. Another type of container for fruit is a double-wall, double-floor box which arrives at the packaging line as a prescored, stapled-joint blank. The box is formed by pulling the sides of the blank; the top section can be pushed into the bottom section to form the double walls. 6 illustrations. M.W.

BOXBOARD CONTAINERS. Operating problems in fibre box manufacture. Boxboard Containers 68, no. 696: 47-50 (December, 1950); 69, no. 697: 30, 32, 35; no. 698: 34, 36, 39; no. 699: 34-6, 38; no. 700: 36, 39, 41; no. 701: 36, 39, 41; no. 702: 56, 59-60; no. 703: 43-4; no. 704: 31-2, 34; no. 705: 27-8, 30; no. 706: 40, 42, 47; no. 707: 46, 48; no. 708: 35, 37-8 (January-December, 1951); 70, no. 709: 27-8, 30 (January, 1952).

The manufacturing sequences in the production of fiber boxes are traced, and the problems encountered at various stages are analyzed. The specific articles, listed in chronological order of appearance, are as follows: (1) Handling roll stock; (2) Adhesive preparation; (3) Heat for single faced board; (4) Producing single faced board; (5) From bridge to combining point; (6) Hot section and cooling section; (7) From scoring to take-off; (8) Mounting dies on a printer-slotter; (9) Preparing a printer-slotter for operation; (10) Operating a printer-slotter; (11) Taping of corrugated boxes; (12) Preparing to stitch corrugated boxes; (13) Stitching corrugated boxes; and (14) Preparing boxes for shipment. Illustrations accompany the articles. M.W.

LACOSTE, DICK. Pulp, paper, and paperboard industry essential to welfare of war casualties at Forward Hospital, Korea. Southern Pulp Paper Manuf. 15, no. 2: 21-2 (February, 1952); *cf.* B.I.P.C. 22: 435.

The V-paperboard container with phenolic foam insulation which is used for shipping whole blood is described. 3 illustrations. M.W.

SHIPPING CONTAINERS—MULTIWALL BAGS

POCTA, FRANK. The paper shipping sack industry. Paper Trade J. 134, no. 8: 110 (Feb. 22, 1952); *cf.* B.I.P.C. 21: 492.

The average rate of growth of multiwall shipping sacks during the past 15 years was about 12% per year, and the demand in 1951 reached 2.5 billion. Specification papers converted into paper shipping sacks during 1951 amounted to 895,000 tons. A continually increasing demand for multiwall bags by different types of industries requires a variety of constructions and specification papers. There are 97 plants in the United States which manufacture paper shipping sacks of various types. 1 table. M.W.

SHIPPING CONTAINERS—TESTING

KLINGELHÖFFER, H. The testing of packages for adequacy during shipments. Bull. assoc. tech. ind. papetière 5, no. 7: 418-26 (November, 1951). [In French]

The author discusses methods and instruments for recording the stresses and shocks to which packages are exposed during shipment by different modes of transportation, as well as laboratory installations for testing the suitability of a given package for the protection of its contents against shipping hazards. The importance of the correct interpretation of the testing results is stressed. 9 figures. E.S.

WELCH, JACK F., and DUGGAN, E. W. Rodent-resistant vinyl films. Modern Packaging 25, no. 6: 130-1, 182-3 (February, 1952).

Tests were carried out to determine the activity of four rodent-repellent chemicals when incorporated in vinyl film. The test films were converted to box coverings, folded at the bottom and closed with a liquid cold seal, slipped over the standard fiberboard test boxes, and electronically sealed on top. Two compounds of the trinitrobenzene complex were found to be highly effective. A zinc dimethyldithiocarbamate-cyclohexylamine complex was also effective, and indications are that it does not migrate in vinyl films which would make it valuable in the protective packaging of foods. Tetramethylthiuram disulfide did not afford the degree of protection shown by the other materials. 2 tables, 2 figures, and 3 references. M.W.

SISAL

HAARER, A. E. Our sisal industry. Paper Making and Paper Selling 70, no. 4: 22-5 (Winter, 1951-52).

The author describes the development of the East African sisal industry which now leads the world in the production of hard fibers. 2 tables and 8 figures. M.W.

STARCH

CALDWELL, C. G. Industrial starch research. Chem. Eng. News 30, no. 6: 514-17 (Feb. 11, 1952).

The author reviews the research which is being carried on to improve and expand the uses of starch (modification of its properties by treatment with acids, heat, oxidizing agents, and enzymes and development of low and highly substituted derivatives) and some of the commercial effects of this research. 3 illustrations. M.W.

FOSTER, JOSEPH F., and ZUCKER, DONALD. Length of the amylose-iodine complex as determined by streaming dichroism. J. Phys. Chem. 56, no. 2: 170-3 (February, 1952).

The streaming dichroism of the amylose-iodine complex has been studied quantitatively in solutions containing only 0.001-0.002% of amylose; in aqueous solutions, aggregation is serious. When the complex is prepared in 15% pyridine, aggregation is evidently avoided, and the length of the resulting complex is shorter than expected on the basis of reported molecular-weight data. All systems appear to be very polydisperse with regard to length; however, the same assumed molecular-weight distribution fits data on both orientation angle and degree of dichroism. The results on a series of five subfractionated amylose samples show a positive but surprisingly small correlation between length of the complex and intrinsic viscosity of the parent amylose. 1 table, 3 figures, and 16 footnotes. E.S.

FOSTER, JOSEPH F., and ZUCKER, DONALD. Streaming birefringence behavior of some subfractionated amylose preparations. J. Phys. Chem. 56, no. 2: 174-7 (February, 1952).

The results of streaming birefringence measurements, over a wide gradient range, are presented for 13 subfractionated amylose preparations covering an almost fourfold range in intrinsic viscosity. Evidence is presented to indicate that 12 of these (which were prepared by fractional crystallization with octyl alcohol) are contaminated with appreciable amounts of amylopectin. The mean lengths measured at various gradients agree, in general, within 6 to 20% with the length of the iodine complexes of the corresponding preparations previously measured by streaming dichroism. It is concluded that the configuration in the solvents used (glycerol-containing ethylenediamine and aqueous potassium hydroxide) is most probably the helical one rather than a random coil. The product of the rotary diffusion constant times the intrinsic viscosity, in the case of the various fractions, is constant within experimental error. The degree of birefringence measured under fixed conditions of concentration, gradient, viscosity, and temperature is directly proportional to the intrinsic viscosity of the preparation. The linear increase of birefringence over an extended range of gradient cannot be explained on the basis of the theory developed for rigid molecules and indicates that stretching of the molecules is significant at higher gradients. 2 tables, 4 figures, and 15 footnotes. E.S.

ZIMM, B. H., and THURMOND, CARL D. The molecular weight of amylopectin. J. Am. Chem. Soc. 74, no. 4: 1111-12 (Feb. 20, 1952); *cf.* B.I.P.C. 19: 352.

Light-scattering measurements of the molecular weight of an acetylated amylopectin in nitromethane solution at 25° are reported. The value obtained was $4.2 \pm 1 \times 10^8$. 5 footnotes. M.W.

STATIC ELECTRICITY

LOPEZ, JOSEPH A., and HEWSON, JOHN K. Static problems and their control in the textile industry. Am. Dyestuff Reptr. 41, no. 4: P105-9 (Feb. 18, 1952).

The nature of static problems in the textile industry are outlined, and some of the methods currently used to overcome them are described and evaluated. An electronic static-control instrument which was developed on the principles of controlled diffuse discharge is also described. 7 figures. M.W.

STATIC ELECTRICITY IN PAPER

ST. JOHN, EUGENE. Static; bugaboo of the pressroom. Inland Printer 128, no. 5: 52-3 (February, 1952).

The problem of static electricity in paper can be controlled by maintaining a high relative humidity in the pressroom, by conditioning paper to the proper moisture content in standard humidifying equipment or with steam jets, or by various devices which ionize the air around the papers. Electric neutralizers, alpha-radiation, aluminum or copper tinsel, the flames of sheet heaters, x-rays, and ultraviolet light can be used for ionization. The manner of coping with the problem of static electricity depends on local conditions and the means available to the printer. M.W.

STATISTICAL METHODS

MACAULAY, DONALD. Saving press time through statistical control of paper. Modern Lithography 20, no. 2: 31-3, 109, 111 (February, 1952).

Some illustrations are presented of the use of statistical quality control in lithography. Through the use of statistical analysis, variations in paper can be evaluated and successfully adapted to production processes. 3 figures and 12 references. M.W.

NOBLE, CARL E. Variations in conventional control charts. Ind. Quality Control 8, no. 3: 17-18, 20-2 (November, 1951).

The chemical processes in the paper industry offer an opportunity for the application of a number of interesting variations of the conventional quality control charts. These variations are necessitated by the normal shifts in process averages and the stratifications inherent in certain papermaking operations. Examples are cited in which the standard procedures for calculating control limits yield too narrow or too wide limits (inspecting carloads of clay for brightness and checking the stretch in creped paper manufactured in rolls) and satisfactory procedures to be employed in such cases are described. Techniques for obtaining the most efficient method of sampling various paper processes are also presented; in the example used as an illustration, the control of the difference of three units in tensile strength of paper prepared from the identical furnish, but sent over two different paper machines, is discussed. 2 tables, 1 figure, and 3 references. E.S.

TRELFA, RICHARD T. Bibliography on statistical quality control. Tappi 35, no. 2: 119-20A (February, 1952).

A list of books on statistical methods and periodical articles pertaining to applications in the pulp and paper industry, arranged by authors in alphabetical order, is presented. E.S.

STEAM POWER

CRAIG, ERIC R. New boiler features. Pulp & Paper 26, no. 2: 84, 86 (February, 1952).

The new central boiler plant of the Publishers' Paper Co., Oregon City, Ore., is described; it is designed to burn a combination of fuel oil and bark by-products from a hydraulic log-barking process. The two-drum Springfield boiler is designed for an ultimate working steam pressure of 250 p.s.i. with 100° of superheat; a steam pressure-reducing valve reduces this pressure for the present mill process requirements. 7 illustrations. M.W.

JOP. Continuous salt determinations in steam power-plant operation. Wochbl. Papierfabr. 79, no. 22: 715 (Nov. 30, 1951). [In German]

The need for the installation of conductivity meters in steam plants is emphasized; these instruments record continuously the salt content of the condensate and steam by measuring their electrical conductivity and indicate any departure from safe limits. This is particularly important in the operation of high-pressure boilers. E.S.

STRAW

ARONOVSKY, S. I. Recent advances in pulping straw in the United States. Northern Regional Research Laboratory AIC 324: 11 p. (December, 1951); *cf.* B.I.P.C. 21: 116.

Following a brief historical sketch of the developments in straw pulping, the experimental work which has taken place at the Northern Regional Research Laboratory since 1940 is summarized. New pressure pulping formulas and the mechanochemical process have made practical the use of straw pulp for board, and the neutral sulfite process produces straw pulp suitable for use in the production of fine paper on a competitive basis with pulps from other raw materials. 1 table and 1 figure. M.W.

PAPER MAKING AND PAPER SELLING. A plan for paper. Paper Making and Paper Selling 70, no. 4: 26-33 (Winter, 1951-52).

A plan for the utilization of straw as a raw material for paper in Britain is presented. It is shown that as a papermaking fiber straw is capable of stretching existing supplies of wood pulp, esparto, waste paper, and rags without loss of quality in the product and with large savings in cost. A production of 500,000 tons of paper from straw is shown to be practicable. The economics of straw pulping are analyzed, based on the Celdecor-Pomilio soda-chlorine process, and the figures indicate that a sufficiently good return on invested capital would be realized. The establishment of straw pulping by private industry, with government co-operation in maintaining a policy of high cereal production, would help to ease the current shortage of paper and would reduce considerably the volume of imports of papermaking raw materials. 1 table and 7 illustrations. M.W.

STREAM POLLUTION

ANON. Deinking in New England; how Falulah Paper Co. does it. Pulp & Paper 26, no. 2: 57-8, 60 (February, 1952); *cf.* B.I.P.C. 22: 402.

At the recommendation of the Nashua River Paper Mills Committee, the Massachusetts Department of Public Health, and the National Council for Stream Improvement, the Falulah Paper Co., Fitchburg, Mass., constructed a sedimentation system to remove the settleable organic matter from mill wastes. The system, which is capable of deinking approximately 45 tons per day of old book and magazine stock, is a batch process. Unique features of the system include a collection mechanism equipped with an automatic overload raising device which makes the handling of high sludge consistencies possible, and an access tunnel to the sludge pipe which permits easy cleaning. The operation of the settling tank and the sludge disposal process are described. 1 table and 6 illustrations. M.W.

BAIGAS, J. F., JR. The advantages and disadvantages of paper machine white water utilization. Tappi 35, no. 2: 97-8A (February, 1952).

Paper-machine overflow waters fall principally into four classes: overflows from (1) processing of new pulp into paper products, (2) processing of old papers into board products, (3) processing of pulp combined with fillers into paper products, and (4) processing of locally produced, partially washed new pulp (such as strawboard and semichemical pulps) into board products. The stream pollution resulting from these four types of overflow and means for overcoming it are discussed. E.S.

CAREY, W. GORDON. Sewage, river pollution and trade wastes. Repts. Progress Applied Chem. 35: 828-39 (1950); *cf.* B.I.P.C. 21: 425.

The progress which was made in the more important branches of sewage and trade-waste treatment during 1950 is reviewed. 22 references. M.W.

SULFITE PROCESS

SYKOL, V. P. Effect of side relief on the quality of sulfite pulp. Bumazh. Prom. 25, no. 4: 6-8 (July-August, 1950). [In Russian]

On the basis of experimental observations, methods are suggested for the improvement of pulp quality and the control of the viscosity and mechanical properties of pulp during the cooking process. 2 tables. E.G.S.

SULFITE WASTE LIQUOR

ANON. Spent sulphite liquor may make icy roads safe. Paper Trade J. 134, no. 7: 12 (Feb. 15, 1952); Paper Mill News 75, no. 7: 7 (Feb. 16, 1952).

Experiments are being conducted on the use of spent sulfite liquor as a binder to make sand hold better on slippery road surfaces. The hot sulfite liquor seems to pit the ice surface when it strikes and, if sand is applied immediately, it freezes to the road surface and provides a more lasting grit. M.W.

NILSSON, GERDA. Precipitation of protein in whey by lignin from sulfite waste liquor. Kgl. Lantbruks Högskol. Ann. 17: 1-5 (1950). [In English]

Lignin, as well as tannin, is capable of forming complex compounds with various kinds of proteins. The possibility of utilizing the lignin in spent sulfite liquor, draff (the solution remaining after fermentation of the sugar in spent sulfite liquor and removal of the alcohol by distillation), and an alkali lignin prepared from sulfate black liquor was investigated for the precipitation of the protein from whey. It was found that 5-7% spent liquor or draff or a corresponding quantity of lignin precipitates the protein of whey completely at a pH of 3.5 to 4.5; heating of the whey to 30°C. facilitates the separation of the precipitate. Spent sulfite liquor produced a disagreeable taste and smell in the filtrate, whereas the other two did not. The precipitate of all three media could be used as a source of nitrogen for the culture of acetic acid bacteria and *Torula lactosa* equally as well as the whey before precipitation. 2 tables, 1 figure, and 5 references. E.S.

OGAIT, ALFRED. Furfural from spent sulfite liquor. Das Papier 6, no. 1/2: 7-9 (January, 1952). [In German]

Following a brief description of the properties of furfural and its large-scale production from agricultural wastes by the Quaker Oats Co. in the United States, the possibilities of utilizing the pentosan-rich (20-22%) spent beech sulfite liquors (I) and digester relief gases are described. The spent liquors of spruce sulfite cooks with their low pentosan content (8-10%) were not even considered worth the trial. The methods for the recovery of furfural from (I) are essentially the same as those used for agricultural residues, although the steam consumption is about three times as high, and the required installations are much more expensive. The yield amounts to about 50 kg. of furfural/ton of pulp from (I) and 5-10 kg./ton from the condensates of the relief gases. The method cannot compete with that from agricultural wastes under present conditions, and no special incentive exists for its further development. In conclusion, a brief reference is made to the recovery of furfural from (I) during wartime in Germany, where for a period of five months an idle digester in a sulfite mill with reduced output was used as a reaction vessel. 7 references. E.S.

SULFUR

ANON. Recovering the golden element. Taylor Technol. 4, no. 2: 21-3 (Fall, 1951).

A process is described for the recovery of elemental sulfur from sour residue gas which is produced at the natural gasoline plant of Lion Oil Co. at Magnolia, Ark. A modified Claus method is employed, and the process is designed for completely automatic control. 1 figure and 1 flowsheet. M.W.

ARDEN, FREDERIC. First sulphur consumption figures. Can. Chem. Processing 36, no. 1: 20, 22 (January, 1952).

The consumption of sulfur in the United States in 1950 totaled 4,126,000 long tons; sulfuric acid consumption during 1950 amounted to 14,122,000 short tons (employing also other sources than elemental sulfur). Of these totals 6,409,000 long tons of sulfur were used, mostly as acid, to such an extent that the sulfur was no longer available for further use. With regard to sulfur supply, an additional 1,000,000 long tons per year over the present production can be expected. This will come from new developments and by-product recovery from sour gas, and allows for declining production in some fields. The supply will be adequate for defense and defense-supporting industry and for essential civilian uses. The present shortage is based on the current distribution program which will have to be adjusted to available supplies. This can be brought about by technological developments and changes. M.W.

SURFACE AREA

ERGUN, SABRI. Determination of geometric surface area of crushed porous solids; gas flow method. Anal. Chem. 24, no. 2: 388-93 (February, 1952).

A gas-flow method is described which permits the determination of the geometric surface areas of crushed porous solids (i.e., the surface area of an impervious envelope surrounding the particles in an aerodynamic sense) from the measurements of pressure drop as a function of gas-flow rates and bulk

densities. The method, which is based on a fundamental general flow equation that is valid at all flow rates, automatically determines the particle density of the solids and offers two alternative methods of mathematical analysis, one of which is identical in form with the Kozeny equation, whereas the other is entirely new for this purpose. Geometric surface areas are essential in the estimation of rates of sedimentation, resistance to flow of fluids, bulk density and packing problems, and rates of heat and mass transfer in flow processes. The method also determines the void space in a porous solid as a result of the measurement of particle density. 2 tables, 3 figures, and 86 references. M.W.

ERGUN, SABRI. Determination of particle density of crushed porous solids; gas flow method. Anal. Chem. 23, no. 1: 151-6 (January, 1951).

A gas-flow method is presented for the determination of particle density of crushed porous materials from gas-flow rate, pressure drop, and bulk density measurements. Two alternative equations may be used which constitute two independent procedures. The equipment and procedures are outlined. The validity of the method has been established by comparing the results with water-displacement densities. 5 tables, 6 figures, and 42 references. M.W.

SYNTHETIC FIBERS

DAVIS, J. A. Properties and possibilities of present synthetic fibres. Can. Chem. Processing 36, no. 1: 58, 60, 62 (January, 1952).

Following a discussion of the chemical development of synthetic fibers, the properties of cellulose acetate, nylon, Orlon, and the polyester fibers are described. In the rayon field Canadian producers plan on expanding their productive capacities from a 52-million pound level in 1950 to a 73-million pound level in 1952. Canadian Chemicals Limited has announced plans to erect a cellulose acetate plant with a capacity of 15 million pounds in 1953. Additional production of nylon and the acrylic fibers is also planned. M.W.

TESTING, GENERAL

GRIFFIN, ROGER C. Report of Standards Committee for 1951. Tappi 35, no. 2: 81-4A (February, 1952).

The chairman of the Committee refers to the slight attention paid by committee members to the review and revision of many of the older TAPPI Standards and suggests ways and means for improving the situation. In an appendix are listed the 127 Standard and Suggested Methods which have not been revised or reviewed for a period of from six to 25 years. 2 tables and 7 references. E.S.

TESTING, GENERAL—PAPER

CASEY, JAMES P. The testing of paper. Paper Ind. 33, no. 11: 1325-7 (February, 1952).

The author divides the types of testing done on paper into four general classes: handling tests, use tests, empirical tests, and fundamental tests. The significance, characteristics, and shortcomings of each group are dis-

cussed, and brief consideration is given to paper specifications and quality control. 6 references. E.S.

TEXTILE INDUSTRY AND FABRICS

HOWITT, F. O. Cellulose textile chemistry. Repts. Progress Applied Chem. 35: 525-47 (1950); *cf.* B.I.P.C. 21: 427.

A review of the more recent fundamental research on cotton and other natural celluloses, regenerated celluloses and cellulose derivatives, cellulose acetate and other cellulose esters, cuprammonium rayon, and cellulose ethers is presented. Most of the references are from 1949 and 1950. 235 references. M.W.

ULTRA-VIOLET RAYS

DÉRIBÉRÉ, M. The pathology of the book and the use of ultra-violet rays. Papeterie 73, no. 12: 719, 721 (December, 1951). [In French]

Reference is made to the different destructive agents which may shorten the life of books and to the Italian organization Istituto di Patologica del Libro in Rome (*cf.* B.I.P.C. 11: 409) which deals with all aspects of book conservation. Particular attention is drawn to the danger of infection by air-borne micro-organisms and to the possibilities of air sterilization in libraries, papermaking establishments, etc., with ultraviolet lamps. Methods of installation and necessary precautions for protecting personnel are also listed. 1 table and 1 illustration. E.S.

VACUUM PACKAGING

OSCAR MAYER & COMPANY. Semi-rigid vacuum pack. Modern Packaging 25, no. 6: 106-7 (February, 1952).

Oscar Mayer & Co. has introduced a new type of self-service vacuum package for sliced luncheon meats. The Vacuum-Pak utilizes a rigid tin-plated base in combination with a sheet of unprinted transparent saran film and a colored paperboard "collar" which anchors the edges of the plastic film to the metal base. 6 illustrations. M.W.

VANILLIN

ANON. Who'll take vanillin now? Chem. Week 70, no. 5: 33-4 (Feb. 2, 1952).

The supply of vanillin will be increased this year by three new production sources: the West Coast plant of Monsanto, expansion by Marathon Corp., and a new plant which is being developed at Thorold, Ont., by the Ontario Paper Co., Ltd. In each case lignin provides the raw material. A new process will be employed by Ontario Paper Co. in which lime is used instead of caustic soda for forming the lignosulfonate. Vanillic acid and acetovanillone will also be produced in addition to several other by-products. M.W.

WASTE PAPER

KIRKPATRICK, W. A., and WISE, JAMES A. Deinking mills dilemma. Paper Trade J. 134, no. 9: 26-7 (Feb. 29, 1952).

The importance, as a raw material, of reclaimed fiber is evidenced by the fact that its use for the manufacture of paper and board amounts to 35%

of the total fiber used or approximately seven million tons annually. A serious problem for the papermaker is created by the inclusion of deleterious materials, such as thermoplastic coatings and adhesives, in the waste paper. As little as two pounds of the thermoplastic material can cause 100 tons of otherwise satisfactory fiber to be unacceptable. The solution to the problem can be achieved through the co-operation of printers, publishers, and paper converters by preventing waste papers which contain these materials from reaching the deinking mills. M.W.

NADELMAN, A. H. Identification of troublesome materials in deinking systems. Paper Trade J. 134, no. 9: 27-8 (Feb. 29, 1952).

Some tests for the identification of objectionable materials which appear in a finished sheet after normal deinking and reworking procedures are described, and references to other identification methods are included. 4 references. M.W.

STOVROFF, HASKELL. Ups and downs of 1951's waste paper market. Paper Trade J. 134, no. 8: 134-5 (Feb. 22, 1952); *cf.* B.I.P.C. 21: 500.

Early in 1951 waste paper supplies were short, and demand for all grades was the highest in history, with the result that prices rose to unprecedented levels. Prices were frozen at these high levels, but demand remained high throughout the first half of the year. During the second half of the year, the demand for low grades was considerably reduced. High grades were in demand by paper mills, but a decreased demand by board mills brought about a decline in prices. A serious problem for stock consumers is caused by the use of insoluble latex and plastic adhesives for paper coating. M.W.

WAXES

ANON. Getting wax from sugar cane. Chem. Eng. 59, no. 2: 272, 274-6 (February, 1952); *cf.* B.I.P.C. 22: 362.

Following a description of the solvent-extraction process used by S. C. Johnson & Son, Inc., and Cuban-American Sugar Co. for the refining of sugar cane wax, the Australian process which uses vacuum distillation and a chromic acid bleach is outlined. 2 flow diagrams. M.W.

WOOD

CRUIKSHANK, JAMES W. The cellulosic raw material situation. Tappi 35, no. 2: 24A, 26A, 28A, 30A (February, 1952).

The author discusses timber supplies and trends in pulpwood production, supplemented by statistical data, with particular emphasis on the drain of hitherto used species which is far in excess of the annual growth. Additional sources of cellulose which hold promise for greater use by the pulp and paper industry are reviewed, including logging and sawmill waste and little-used species on the West Coast, unused timber in the Rocky Mountains, aspen in the Lake States, cull hardwoods in the South, scrub oak in Florida and Texas, pine logging waste and sawmill waste in the South, cores from veneer logs, and bagasse. In conclusion, the need for better forestry to improve timber yields is stressed. 4 tables and 10 references. E.S.

HESS, ROBERT W. Pulpwood from tropical forests. Unasylva 5, no. 3: 102-6 (July-September, 1951).

Although the coniferous forests of the tropics are relatively small in extent and are being heavily cut, one of the most promising future sources of pulpwood from tropical regions is found in pine plantations. Careful analysis and considerable research would be required, but indications are that volume yields of pulpwood could be obtained in a very short time. Hardwoods, which comprise the bulk of tropical forests, grow in varying degrees of mixture. Except for swamp forests, the heterogeneity of the forests would not permit exploitation unless a combined operation could be developed in which a variety of products would be obtained. With the hardwoods, as well, the establishment of plantations appears to be a good possibility. A technical and economic analysis of factors such as the frequency of clearing required, the deterioration of pulpwood from stain, decay, and insects, seasonal operations, and location of mills would be required. M.W.

WOOD DISTILLATION

CHARLES, E. Modern wood distillation. Chimie & industrie 67, no. 1: 56-62 (January, 1952). [In French]

The author reviews recent developments in wood-distillation procedures and units (vertical ovens with gas circulation) which are now employed in France. 2 tables and 13 references. E.S.

WOOD TRANSPORTATION

MCCOLL, B. J. The Bonnard prehauling unit. Pulp Paper Mag. Can. 53, no. 1: 102-3 (January, 1952).

The unit which is designed for the complete mechanical handling of 4-ft. wood from the stump is described. A complete evaluation of the performance characteristics of the vehicle has not yet been made. M.W.

WOOD WASTE

SIIMES, F. E. Waste-wood quantities in the Finnish mechanical wood-conversion industry. Paper and Timber (Finland) 34, no. 1: 2-4 (January, 1952). [In Finnish; English summary]

The types and quantities of wood waste produced in Finland by sawmills and other wood-conversion factories and its profitable utilization are discussed. 12 tables. E.S.

X-RAY RESEARCH

KAST, W. The deformation of cellulosic gels by "complete" x-ray orientation measurements. Kolloid-Z. 125, no. 1: 45-51 (January, 1952). [In German]

The lamellar effect in cellulose gels increases with increasing cellulose concentration in the spinning solution with increasing D.P. and decreasing degree of swelling. These relationships correspond to the interpretation that the lamellar effect with stretching is greater the narrower the network of the cellulose gel, and that the increasing transverse forces are responsible for the lamellar effect. The effect also increases with increasing rate of stretch, but this increase can be counterbalanced by simultaneous elevation of the temperature. The results support the dynamic concept of network formation; the number of active connecting points and, hence, the magnitude of the lamellar effect depend on the relation of the life period of the connecting points to the rate of deformation; the former will be greater at lower temperatures or higher viscosities. 5 figures and 18 references.

K.W., Jr.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

ALKALINE PROCESSES

BRIGGS, BEN T. Wood pulp digestion. U. S. patent 2,583,994. Filed June 21, 1946. Issued Jan. 29, 1952. 2 claims. Assigned to Rayonier Incorporated. [Cl. 92-13]

A process for the preparation of chemical wood pulp from wood chips involves the following steps: (1) a steam pretreatment at a temperature of 140-200°C. in the absence of any free liquid, and (2) an alkaline cook under conditions essentially normal for a one-stage alkaline cook. This corresponds to Canadian patent 471, 679; *cf.* B.I.P.C. 21: 504. E.G.S.

ALKALINE PROCESSES—RECOVERY

HOCHMUTH, FRANK W. Chemical feeder for black liquor recovery systems. U. S. patent 2,583,145. Filed Oct. 15, 1947. Issued Jan. 22, 1952. 3 claims. Assigned to Combustion Engineering-Superheater, Inc. [Cl. 23-262]

A black liquor recovery system incorporates a vibrating screen mechanism for feeding salt cake into the salt cake mixing tank. 2 figures. E.G.S.

BOARD

WEYERHAEUSER, FREDERICK. Production of hot-molded articles from wood sawdust. U. S. patent 2,583,618. Filed July 23, 1948. Issued Jan. 29, 1952. 15 claims. Assigned to Rock Island Millwork Company. [Cl. 18-55]

A method for the formation of molded board from sawdust comprises the steps of applying a film of water to the surface of a metal sheet, covering the wetted surface with a dry, uniform mixture of sawdust and a solid, heat-activatable binder (4-25 parts per 100 parts of bonedry wood in the

sawdust); wetting the particles in the resulting mixture with water; and heating and pressing the mixture to a density of 45-65 lb./cu. ft. between platens at 300-400°F. to dry and bind the mixture as an integral molded body. 8 figures. E.G.S.

BOARD SPECIALTIES

ARNESON, EDWIN L. Paperboard partitioned article carrier. U. S. patent 2,584,658. Filed Sept. 23, 1949. Issued Feb. 5, 1952. 2 claims. Assigned to Morris Paper Mills. [Cl. 229-28]

The longitudinal and lateral partitions of a paperboard bottle carrier extend to the bottom of the carrier when the latter is erected, thus providing full protection for the bottles. 8 figures. E.G.S.

CLARKE, JOHN D. Carton. Canadian patent 480,145. Filed June 11, 1948. Issued Jan. 8, 1952. 6 claims. Assigned to Samuel F. Jones, Chesley L. Jones, and Mervyn H. Jones, doing business as Patented Packages.

A frame view box is described in which a bottom panel is equipped with hollow side walls provided by panels which form inner and outer wall sections connected by a top spacer section. This is the same as U. S. patent 2,444,497; *cf.* B.I.P.C. 18: 886. 12 figures. E.G.S.

CONDON, ROBERT S. Fiber body container having metal end closures. Canadian patent 480,449. Filed Feb. 4, 1948. Issued Jan. 22, 1952. 5 claims. Assigned to Continental Can Co., Inc.

A method for the attachment of metal-end closures to fiber containers is described in which the end is provided with a channel to receive the body wall; the channel is so dimensioned that its inner wall is of less diameter than the inner wall of the body, with the result that the channel can be centered over and slipped onto the body without contacting the inner wall of the body so as to scuff and tear the inner liner. 5 figures. E.G.S.

CRANE, WALTON B., and CRANE, WILLIAM B., JR. Cellular container. Canadian patent 480,197. Filed June 16, 1949. Issued Jan. 15, 1952. 9 claims. Assigned to Alpak.

A combination shipping, storage, and display container is formed from a single blank of paperboard material; when assembled, a cellular partitioned structure is provided. This is the same as U. S. patent 2,476,181; *cf.* B.I.P.C. 19: 887-8. 9 figures. E.G.S.

DECKER, CHARLES A., and SCATURRO, PETER S. Collapsible step display stand. U. S. patent 2,584,849. Filed Nov. 2, 1949. Issued Feb. 5, 1952. 2 claims. Assigned to Arvey Corporation. [Cl. 211-149]

A cardboard display stand is formed with a step display section which is adapted to be mounted in an upright position by means of an easel section. The display and easel sections can be moved from a collapsed to a distended position by a downward pressure on the step portion of the display section. 10 figures. E.G.S.

FENSKE, PAUL N. Temperature-preserving article container.

U. S. patent 2,561,731. Filed Feb. 6, 1948. Issued July 24, 1951. 4 claims. [Cl. 229-14]

A double-wall, paperboard insulating container for hot or cold foods (e.g., ice cream) embodies a dead air space between the inner and outer walls, which is maintained by suitably located spacers. 4 figures. E.G.S.

FOSTER, THOMAS W. Bottle carrier. U. S. patent 2,584,689. Filed May 28, 1948. Issued Feb. 5, 1952. 4 claims. Assigned to Container Corporation of America. [Cl. 229-52]

A bottle carrier incorporates side walls which are joined by end flaps to an interior wall at the locations where maximum stress is applied when the carrier is lifted by force exerted on the upper edge of the interior wall. 13 figures. E.G.S.

FRASE, RAYMOND E. Materials handling and shipping pallet. Canadian patent 480,622. Filed March 6, 1950. Issued Jan. 29, 1952. 5 claims. Assigned to Addison-Semmes Corporation.

A paperboard pallet embodies spaced supporting posts, each of which comprises an inner member in the form of a solid-wall paperboard tube and an outer member of corrugated board wound around the tube, with the corrugations perpendicular to the deck of the pallet. 3 figures. E.G.S.

GILBERT, CLYDE L. Bottle carriers. Canadian patent 480,738. Filed Sept. 10, 1948. Issued Jan. 29, 1952. 4 claims. Assigned to Owens-Illinois Glass Company.

A paperboard bottle carrier is particularly adapted to facilitate the rapid placement of bottles in the carrier by automatic machinery. The carrier is provided with a bail-type handle. 8 figures. E.G.S.

MILCHIN, JACK. Bottle carrying cartons. Canadian patent 480,601. Filed Oct. 26, 1948. Issued Jan. 29, 1952. 4 claims.

A bottle carrier is provided with end-wall panels, arranged in pairs at each end of the carton, which extend upwardly from the bottom wall of the carton to enclose completely the lower portion of the bottles in the carrier. 6 figures. E.G.S.

PERRY, WALTER M., and PERRY, FAIRFIELD S. Pallet for handling materials. U. S. patent 2,583,443. Filed Dec. 4, 1947. Issued Jan. 22, 1952. 8 claims. [Cl. 248-120]

An expendable pallet consists of a corrugated board deck and base board which are separated by spacers which are made up of strips of corrugated paper bent in zigzag formation. 7 figures. E.G.S.

TIERNEY, MARCUS M. Box for displaying contents. U. S. patent 2,585,056. Filed Aug. 19, 1946. Issued Feb. 12, 1952. 13 claims. [Cl. 229-17]

A display container for screws, small nails, tacks, and similar articles of hardware has a bottom portion which can be swung to expose an opening in the box through which the contents are visible and accessible, as well as means for holding the bottom portion in the swung position. 7 figures. E.G.S.

UBER, JAY J. Paper impregnating or saturating compositions. Canadian patent 480,249. Filed Feb. 6, 1950. Issued Jan. 15, 1952. 5 claims. Assigned to E. I. du Pont de Nemours and Company.

A method for the preparation of stock for shoe midsoles, counters, and the like comprises the steps of mixing rubber latex with a water-soluble sodium salt of lignin; precipitating free uncoagulated lignin from the mixture by the addition of ammonium sulfate; impregnating a wet paper web with the dispersion; and heating the impregnated web until the lignin is precipitated as free colloidal lignin, and ammonia is driven off. This is the same as U. S. patent 2,558,634; *cf.* B.I.P.C. 21: 889. E.G.S.

WEIDLER, WALTER. Cup or glass-supporting plate. U. S. patent 2,582,183. Filed Sept. 22, 1947. Issued Jan. 8, 1952. 4 claims. [Cl. 229-2.5]

A paper plate incorporates an integral cup or glass support which comprises an annular drip-catching flange of absorbent material surrounding the cup or glass. 4 figures. E.G.S.

WILLIAMSON, MARSHALL I. Display carton with cover convertible to easel. U. S. patent 2,585,361. Filed Nov. 13, 1946. Issued Feb. 12, 1952. 6 claims. [Cl. 206-45.21; changed to 206-45.22]

A display box embodies an easel-forming structure which is capable of firmly supporting boxes containing merchandise of considerable weight. 11 figures. E.G.S.

CHLORINE DIOXIDE

SEVÓN, JOHAN W., and SUNDMAN, FREY V. Method for preparing chlorine dioxide gas. U. S. patent 2,585,593. Filed May 16, 1946. Issued Feb. 12, 1952. 6 claims. Assigned to Kymin Osakeyhtiö-Kymmene Aktiebolag [Cl. 23-152]

A process for the preparation of chlorine dioxide comprises the reaction of solid sodium chlorate moistened with insufficient water to dissolve the same with a gaseous mixture of sulfur dioxide and hydrogen chloride. The moisture formed in the reaction is removed continuously, and thus solution of the solid chlorate salt is inhibited. E.G.S.

COOKING PROCESS

SIVOLA, GEORGE. Process for manufacturing pulp from cellulosic fibrous materials. Canadian patent 480,404. Filed Jan. 7, 1948. Issued Jan. 22, 1952. 13 claims.

A three-phase acid-alkali cooking operation is described which is capable of producing pulp which is as white as ordinary calcium-base sulfite pulp, has a low pitch content, and is easily bleached. In the first phase the wood chips are cooked in acid bisulfite liquor to produce incompletely digested pulp, in the second phase the acid cooking liquor is converted to alkali liquor by the injection of alkali into the digester, and in the last phase the digestion of the pulp is completed in the alkali liquor. 5 figures. E.G.S.

DIELECTRICS

DAVEY, EDWARD L. Electric cables. Canadian patent 480,891.

Filed July 14, 1948. Issued Feb. 5, 1952. 1 claim. Assigned to W. T. Glover & Company Limited .

A supertension electrical cable incorporates a lapped dielectric which is built up of an inner part consisting of orientated polystyrene and an outer part of preimpregnated, metallized paper. The interstices of both portions are filled with nitrogen gas under superatmospheric pressure; in operation the gas is retained under pressure by enclosure of the cable in a lead sheath. 2 figures. E.G.S.

DISPENSING CONTAINERS

FLEMING, WILLIAM M. Container for liquids. U. S. patent 2,583,211. Filed Jan. 26, 1949. Issued Jan. 22, 1952. 2 claims. Assigned to Eskimo Pie Corporation. [Cl. 229-7]

A closure for paperboard milk containers is provided with a disklike member which is so related to the top wall of the container that, when the closure is raised in pouring position, the member is automatically and slightly deformed so as to effect a tight frictional engagement with the wall of the pouring opening when the cap is reclosed. 10 figures. E.G.S.

KLEIN, CHARLES G. Lined dispensing carton. U. S. patent 2,583,856. Filed April 6, 1948. Issued Jan. 29, 1952. 3 claims. [Cl. 229-17]

A wax-sealed carton for soap flakes, cereals, and the like incorporates an integral pouring spout which also functions as a part of the end closure. 6 figures. E.G.S.

PREIS, CARL G. Container with water shedding top construction. Canadian patent 480,827. Filed March 21, 1950. Issued Feb. 5, 1952. 5 claims. Assigned to American Can Company.

A paperboard milk container is provided with a domed top member which is formed in such a manner that water and other foreign matter is prevented from collecting on top of the container. 4 figures. E.G.S.

WALLACE, STANLEY. Chemical container and package. U. S. patent 2,585,289. Filed Oct. 22, 1945. Issued Feb. 12, 1952. 8 claims. [Cl. 21-109; changed to 299-24]

A hermetically sealed cardboard container is adapted for the packaging of a cake of deodorizing or moth-repellent chemical (e.g., *p*-dichlorobenzene). 7 figures. E.G.S.

FOLDING BOXES

BROWN, LLOYD K. Folding box. Canadian patent 480,289. Filed June 16, 1950. Issued Jan. 15, 1952. 8 claims. Assigned to National Paper Box Limited.

A folding box which is designed for the packaging of bakery products and the like is formed from a single blank which can be collapsed into a flat plane when it is opened. 5 figures. E.G.S.

CHMIELEWSKI, CATHERINE A. Pie plate. U. S. patent 2,584,379. Filed Jan. 27, 1950. Issued Feb. 5, 1952. 1 claim. [Cl. 206-4]

A triangular pie plate is designed to protect a wedge-shaped piece of pie from destructive pressure and to prevent escaping juices from damaging the pie or the package. The plate may be constructed of plastic, paper or paper products, wood, metal, ceramics, or the like. 9 figures. E.G.S.

HENDRICK, WALTER T. S. Display cartons and boxes. Canadian patent 480,276. Filed March 18, 1950. Issued Jan. 15, 1952. 4 claims. Assigned to J. Lyons & Company Limited.

A cardboard candy box incorporates a hinged top panel which is provided with tongues that are foldable either to a partition-forming position within the box or to a position in which the tongues lie in the plane of the panel and form a cover for the box. 4 figures. E.G.S.

KOWAL, MICHAEL H. Egg carton. U. S. patent 2,584,595. Filed Aug. 7, 1946. Issued Feb. 5, 1952. 2 claims. Assigned to Empire Box Corporation. [Cl. 229-28]

A glued, interlocking egg carton is scored transversely so that it can be divided into two smaller six-egg cartons. 8 figures. E.G.S.

WHITLEY, JAMES E. Collapsible box. U. S. patent 2,583,915. Filed June 30, 1948. Issued Jan. 29, 1952. 1 claim. Assigned to Mabelle L. Dier. [Cl. 229-22]

A collapsible triangular pasteboard container for pie, cake, or other foodstuff includes a hinged cover that embodies means for retaining the container in assembled position and the cover in a closed, locked position. 7 figures. E.G.S.

INSULATION AND INSULATING MATERIALS

GERARD, GEORGE A. Method of making fiber products. U. S. patent 2,584,693. Filed Sept. 11, 1948. Issued Feb. 5, 1952. 1 claim. Assigned to Jiffy Manufacturing Company. [Cl. 154-29]

A cushioning or insulating, fibrous pad material with substantial cohesive properties is produced by mixing a dry, finely divided, hygroscopic, cementitious material (e.g., a dry starch glue) with interlocked short fibers and flakes of beaten waste paper; moistening the center portion of a strip of kraft backing paper; depositing the resultant mixture on the moistened backing sheet; applying heat to evaporate the moisture from the backing; applying a narrow strip of adhesive to one edge of the paper strip; and folding the paper strip over the short fibers and flakes of beaten paper to form an envelope. 3 figures. E.G.S.

SCHUETZ, CLYDE C., and NORMAN, CHARLES R., JR. Method of producing lightweight inorganic insulating material. U. S. patent 2,586,726. Filed Feb. 4, 1948. Issued Feb. 19, 1952. 2 claims. Assigned to United States Gypsum Company. [Cl. 92-55]

A process is described for the formation of inorganic insulating materials (e.g., lagging for steam pipes, boilers, and the like) which have an apparent density of less than 20 lb./cu. ft. and which are made from asbestos fiber and an inorganic binder resulting from the reaction of a pozzolanic substance (e.g., finely ground blast furnace slag, pumice, or diatomaceous earth) and a material capable of yielding an alkaline earth hydroxide (e.g., high-calcium hydrated lime or magnesium oxide). E.G.S.

INTERIOR PACKING

GEORGE, WALTER C., and KLASING, ARTHUR P. Collapsible cellular container partition and process of making same. Canadian patent 480,881. Filed March 21, 1951. Issued Feb. 5, 1952. 3 claims. Assigned to Gaylord Container Corporation.

Collapsible, strip-type, cellular container partitions are designed to provide horizontal ventilation through the cells of the partitions and to prevent the movement of the partition parts beyond their cell-forming positions when the partition is opened or set up. This is the same as U. S. patent 2,549,802; *cf.* B.I.P.C. 21: 749. 15 figures. E.G.S.

HOPP, LEO, and MALLMAN, ESTELLE. Division plate. U. S. patent 2,535,289. Filed Feb. 7, 1948. Issued Dec. 26, 1950. 5 claims. Assigned to The Hopp Press Inc. [Cl. 229-42; changed to 229-28]

The partition members of a compartmented cardboard box comprise two parts, one of which is formed to divide the interior of the box longitudinally, and the other crosswise. 7 figures. E.G.S.

KIRBY, MICHAEL J. Insets for boxes. Canadian patent 480,563. Filed Aug. 19, 1948. Issued Jan. 22, 1952. 13 claims. Assigned one half to R. H. Filmer Limited.

An inset for cardboard boxes comprises a cardboard strip which is slit and scored in such a manner that it will accommodate one or more packaged articles. 28 figures. E.G.S.

LIGNIN ESTERS

LEWIS, HARRY F., and BRAUNS, FRIEDRICH E. Esters of lignin material. Canadian patent 480,101. Filed Oct. 18, 1943. Issued Jan. 8, 1952. 4 claims. Assigned to The Mead Corporation.

An ester product of lignin material and the aliphatic carboxylic acids has desirable properties for use in molding and the like. This is the same as U. S. patent 2,429,102; *cf.* B.I.P.C. 14: 85; 18: 209. E.G.S.

MACHINERY—BINS

HURTER, ALFRED T. Storage bins. Canadian patent 480,929. Filed April 10, 1948. Issued Feb. 5, 1952. 5 claims. Assigned to Stadler, Hurter & Company.

A chip storage bin is designed in such a manner that the pressure on the chips in the lower portion of the bin and the effective depth of the chips immediately above the discharge opening or openings are limited to values below those at which "bridging" or "arching" of the chips across the opening or openings is likely to occur. 2 figures. E.G.S.

MACHINERY—CHIPPERS

OTTERSLAND, PETER N. Disk chipper with horizontally inclined rotary axes. U. S. patent 2,585,673. Filed Sept. 20, 1949. Issued Feb. 12, 1952. 3 claims. [Cl. 241-92]

A disk chipper is constructed in such a manner that the chips are cleanly cut at the ends and are not slabbed off. 1 figure. E.G.S.

MACHINERY—CONVERTING MACHINERY

ARNESON, LAWRENCE E. Carton setup machine. U. S. patent 2,585,074. Filed July 12, 1947. Issued Feb. 12, 1952. 12 claims. Assigned to Morris Paper Mills. [Cl. 93-53]

A machine is provided for the erection of cardboard bottle carriers by the folding of the side wall sections and the manipulation of the end panels along predetermined fold lines in order to maintain the carrier in a setup, locked position. 13 figures. E.G.S.

BROWN, JOHN H., JR. Apparatus for making tubular paper containers. U. S. patent 2,584,542. Filed April 2, 1947. Issued Feb. 5, 1952. 18 claims. Assigned to Lily-Tulip Cup Corporation. [Cl. 93-36.1]

An automatic machine is adapted for the manufacture of two-piece paper cups, in which the seams are joined with a thermoplastic adhesive. The apparatus is the same as that described in Canadian patent 467,029; *cf.* B.I.P.C. 21: 134. 30 figures. E.G.S.

EWALDSON, WALDEMAR C., and SELVIG, JOHN N. Pulp insulating machine. U. S. patent 2,586,634. Filed April 16, 1947. Issued Feb. 19, 1952. 6 claims. Assigned to Western Electric Company, Incorporated. [Cl. 92-55]

A machine for the insulation of electrical conductors with pulp embodies a press roll which can be adjusted axially relative to the plane through which the conductors travel and vertically relative to this plane to control the formation of the pulp around the conductor. 6 figures. E.G.S.

GAUBERT, RENE J., and MARVIN, STANLEY. Boxmaking machine. U. S. patent 2,583,641. Filed Dec. 3, 1946. Issued Jan. 29, 1952. 5 claims. Assigned to Simplex Packaging Machinery, Inc. [Cl. 93-51]

A boxmaking machine embodies means for carrying a box blank through successive operations in which the blank is formed, heat is applied to overlapping portions which carry a heat-sealing material, and the box is held at a cooling station until the sealing composition has cooled sufficiently to maintain the shape of the box. 14 figures. E.G.S.

LAABS, GUSTAVE H. Container assembling apparatus. U. S. patent 2,584,718. Filed Oct. 1, 1949. Issued Feb. 5, 1952. 13 claims. Assigned to Morris Paper Mills. [Cl. 93-55.1]

An apparatus for the assembly of a cylindrical, reinforced paperboard container (e.g., for the shipment of bulk ice cream) is characterized by a pair of contractile split assembling bells, each including a pair of pivotally connected semicircular sections. The bells can be moved relative to one another and contracted to engage the relatively rigid reinforcing rings which are applied to opposite ends of the container body. 9 figures. E.G.S.

LEVKOFF, DAVID. Machine for folding cartons. U. S. patent 2,583,860. Filed Sept. 16, 1948. Issued Jan. 29, 1952. 8 claims. [Cl. 93-49]

A machine is adapted for the successive removal of a number of flat,

cardboard box blanks from the bottom of a stack and the movement of the blanks by a conveyor mechanism toward end-folding means where the end and side walls of the box are erected or folded upwardly to a vertical position, and its flaps are turned down and tucked into slits located at the junction of the box bottom and end walls. 9 figures. E.G.S.

ODQUIST, HAROLD T., and MACOY, EUGENE W. Machine for electrically sealing fiber containers. U. S. patent 2,585,031. Filed May 26, 1947. Issued Feb. 12, 1952. 3 claims. Assigned to American Can Company. [Cl. 93-55.1]

A machine is provided for sealing a fiber container cover onto a fiber body by an interfolding of parts with an interposed thermoplastic or thermosetting adhesive. The adhesive is dielectrically heated prior to the bonding of the interfolded parts. 9 figures. E.G.S.

SALFISBERG, LEROY L. Power-operated hydraulic sealer and crimper. U. S. patent 2,584,815. Filed June 26, 1948. Issued Feb. 5, 1952. 14 claims. Assigned to Ivers-Lee Company. [Cl. 154-42]

A hydraulic sealer and crimper includes means for the control of the initial closing of the crimping jaws under relatively low pressure and the subsequent application of higher pressure to the jaws to complete the pressing, sealing, or crimping operation. 22 figures. E.G.S.

SHIELDS, ALBERT F. Folding machine. U. S. patent 2,583,712. Filed Sept. 11, 1946. Issued Jan. 29, 1952. 11 claims. Assigned to S&S Corrugated Paper Machinery Co., Inc. [Cl. 93-49]

A folding machine is adapted for the formation of flat, collapsed, tubular box blanks from flat, scored sheets. This is similar to Canadian patent 466,587; *cf.* B.I.P.C. 20: 923. 12 figures. E.G.S.

STOKINGER, GEORGE. Machine for making corner mounts. U. S. patent 2,572,673. Filed Oct. 2, 1947. Issued Oct. 23, 1951. 7 claims. Assigned to Ace Art Company. [Cl. 93-1]

A machine for the manufacture of photographic mounting corners includes a mechanism for firmly holding the cap element of a mount while it is being severed from the cap strip and folded in position to be secured to the base element. 15 figures. E.G.S.

WETZLER, JUSTIN J. Carton setup machine. U. S. patent 2,585,201. Filed May 7, 1948. Issued Feb. 12, 1952. 10 claims. Assigned to Shellmar Products Corporation. [Cl. 93-37]

An automatic, high-speed machine is adapted for the erection of collapsible, cellular paperboard egg cartons from a flat, knocked-down condition. 15 figures. E.G.S.

MACHINERY—CUTTERS

SANDBERG, RAY A. Resilient batt cutting machine. U. S. patent 2,585,852. Filed Jan. 29, 1948. Issued Feb. 12, 1952. 11 claims. Assigned to Houdaille-Hershey Corporation. [Cl. 164-21]

A machine is adapted for the severance of articles (e.g., filter units for automotive air cleaners) from a sisal fiber batt. 15 figures. E.G.S.

MACHINERY—DOCTORS

DUNPHY, CLIFFORD G. Dust collector for paper machines. U. S. patent 2,586,014. Filed June 18, 1947. Issued Feb. 19, 1952. 5 claims. [Cl. 92-74]

A paper machine is provided with suction means for the removal of dust and lint which collects on the doctor blades. 4 figures. E.G.S.

MACHINERY—FOLDING MACHINE

FERGNANI, WALTER P. Box blank folding machine. U. S. patent 2,584,855. Filed June 26, 1948. Issued Feb. 5, 1952. 10 claims. Assigned to Post Machinery Company. [Cl. 93-49]

A box blank-folding machine is designed to feed flat blanks from a magazine along a predetermined path and to fold automatically the two marginal portions of each blank inwardly into overlapped relation during its travel along the path. 16 figures. E.G.S.

MACHINERY—HEAD BOX

BEACHLER, EDWARD D. Papermaking machine rectifier roll. U. S. patent 2,566,439. Filed June 27, 1946. Issued Sept. 4, 1951. 4 claims. Assigned to Beloit Iron Works. [Cl. 92-44; changed to 29-121]

A rectifier roll consists of a perforated metal tube and metal disks which traverse the tube and bridge some of the holes therein. Tack-weld bonds are provided at the hole areas to unite the disks and tube. All burrs, sharp corners, and the like are covered with smooth rubber fillets. This corresponds to Canadian patent 450,082; *cf.* B.I.P.C. 19: 63. 5 figures. E.G.S.

MACHINERY—PACKAGING MACHINERY

ALLEN, HOWARD G. Packaging machine. U. S. patent 2,584,529. Filed April 28, 1950. Issued Feb. 5, 1952. 16 claims. Assigned to Savannah Sugar Refining Corporation. [Cl. 53-148]

A bag-forming machine is arranged to receive open-end, partially formed bags with articles contained therein and to successively crease, tuck, fold, and adhesively secure the two ends of the tubular bag blank to complete the formation of the closed bag. 19 figures. E.G.S.

RIDEOUT, ARTHUR E. Machine for closing cartons. U. S. patent 2,584,925. Filed June 9, 1948. Issued Feb. 5, 1952. 9 claims. Assigned to Emhart Manufacturing Company. [Cl. 53-140]

A machine is adapted for the automatic closing and sealing of a corrugated or fiberboard shipping case for bottled beverages. 10 figures. E.G.S.

STEPHANO, CONSTANTINE S. Apparatus for individually wrapping cigarettes. U. S. patent 2,584,060. Filed Dec. 11, 1947. Issued Jan. 29, 1952. 6 claims. Assigned to Stephano Brothers. [Cl. 53-85]

A machine is adapted for the packaging of an individual cigarette in a heat-sealed moistureproof cellophane wrapper. The package is provided with a tear tape for slitting open the wrapper. 29 figures. E.G.S.

MACHINERY—PASTING MACHINE

DAUM, HAROLD, and RUGEN, DANIEL L. Adhesive applying means for coating the flaps of cartons. U. S. patent 2,584,848. Filed May 1, 1948. Issued Feb. 5, 1952. 4 claims. Assigned to Johns-Manville Corporation. [Cl. 118-223]

A carton sealer is described which can be used with cartons of various widths without adjustment. 4 figures. E.G.S.

MACHINERY—PRESSES

BAKER, MERLE W., BEIL, FORREST F., CURTIS, CHARLES F., II, and PATTON, EDWARD A. Apparatus for manufacturing boards of compressed cellulose material and the like. U. S. patent 2,583,249. Filed Nov. 13, 1948. Issued Jan. 22, 1952. 2 claims. Assigned to Curtis Companies Incorporated. [Cl. 18-16]

An apparatus for the production of board from granular wood material (e.g., pulverized mill waste) includes means for forming a panel with a seal around the edges, which is composed of a material that is denser than the main body of the panel, with the result that the body portion is sealed in during the pressing operation. 16 figures. E.G.S.

MACHINERY—PUMPS

ANDERSON, EMITT S., and HALEY, ARCHIE B. Pulp screen flow pipe. U. S. patent 2,584,247. Filed June 4, 1948. Issued Feb. 5, 1952. 3 claims. Assigned to Minnesota and Ontario Paper Company. [Cl. 92-29]

A flow pipe for pulp screens is designed to eliminate the collection of slime which normally accumulates in the conventional type of flow inlet. 7 figures. E.G.S.

MACHINERY—SHEET-FEEDING MECHANISM

SHIELDS, ALBERT F. Feeding mechanism for folding machines. U. S. patent 2,583,713. Filed Jan. 3, 1949. Issued Jan. 29, 1952. 1 claim. Assigned to S&S Corrugated Paper Machinery Co., Inc. [Cl. 271-44]

A feeding mechanism for carton-folding machines is adapted to fold and deliver 120-180 blanks per minute. Means are included for straightening and reforming the crease in any blank in which the panels when folded are askew, without slowing the rate of folding. 15 figures. E.G.S.

MACHINERY—SHEET STACKERS

BANDURA, JAMES, BAISLEY, RAYMOND J., PFEFFER, JOSEPH, and KEELY, CLIFFORD D. Box blank handling machine. U. S. patent 2,585,076. Filed Feb. 14, 1948. Issued Feb. 12, 1952. 1 claim. Assigned to General Corrugated Machine Company Inc. [Cl. 214-6]

A machine is adapted for the stacking of box blanks and, when a predetermined number of blanks have been stacked, for the ejection and delivery of the stack to a conveyor for transfer to a subsequent operation. 10 figures. E.G.S.

MACHINERY—SLITTERS AND WINDERS

CHRISTMAN, PETER J. Winding apparatus. U. S. patent 2,585,226. Filed March 21, 1946. Issued Feb. 12, 1952. 6 claims. [Cl. 242-56]

A winder includes a mechanism for automatically severing a paper web and transferring the leading end of the severed web to another core. 6 figures. E.G.S.

CHRISTMAN, PETER J. Winding apparatus. U. S. patent 2,585,227. Filed March 21, 1946. Issued Feb. 12, 1952. 4 claims. [Cl. 242-56]

A winder includes means for slitting and perforating a paper web and for automatically severing the web at predetermined intervals so that the web can be continuously wound on successive cores. 5 figures. E.G.S.

MATERIALS HANDLING

SHOWALTER, FRANK W. Turntable for paper roll stands. U. S. patent 2,585,859. Filed Oct. 14, 1947. Issued Feb. 12, 1952. 11 claims. Assigned to The American Envelope Company. [Cl. 242-64]

A turntable is provided with two series of paper-roll stands which are so arranged that a partial rotation of the structure will move the stands of one series from a delivery position to a loading position and at the same time move the other series from a loading position to a delivery position. 15 figures. E.G.S.

MOLDED PULP ARTICLES

SHEPARD, ERNEST L. Pulp molding die. U. S. patent 2,585,049. Filed May 19, 1949. Issued Feb. 12, 1952. 7 claims. Assigned to The Canal National Bank of Portland and William B. Nulty. [Cl. 92-54]

A pulp-molding die embodies hood flanges directly adjacent to a die-ring, which extend between the die-ring and a die-plate, and are frictionally interlocked between the ring and the plate. With such a construction, each of the hoods associated with the inner subareas (i.e., minor molding areas) may be initially positioned or replaced from the face side of the unitary die-plate, and are held in place independently of the die-ring. 14 figures. E.G.S.

PACKAGING

BIANCHI, ICILIO W. Flower display package. U. S. patent 2,583,927. Filed Feb. 17, 1950. Issued Jan. 29, 1952. 1 claim. Assigned to I. W. Bianchi, Inc. [Cl. 206-45.33; changed to 206-45.19]

A combination shipping and display package for delicate, perishable flowers (e.g., camellias, gardenias, or the like) comprises a cellophane-enclosed cardboard tray with a relatively high rear wall. The tray incorporates a notch and openings which are designed to receive the stem of the flower. 4 figures. E.G.S.

HURXTHAL, ALPHEUS O., and O'KEEFFE, GEORGE W. Method

of packing finned pipe for shipping and handling. U. S. patent 2,570,059. Filed Sept. 4, 1946. Issued Oct. 2, 1951. 6 claims. Assigned to Proctor & Schwartz, Inc. [Cl. 206-46] *cf.* B.I.P.C. 22: 419.

A cardboard tube is adapted for the packaging of finned metal pipe for shipment, handling, and storage. 5 figures. E.G.S.

WATSON, NATHAN J., and ROCHE, JOHN C. Packaging tray. U. S. patent 2,584,967. Filed Aug. 26, 1949. Issued Feb. 5, 1952. 9 claims. Assigned to Chicago Carton Company. [Cl. 229-42]

A traylike paperboard separator which is designed for use in the packaging of bakery products (e.g., cookies) is enclosed in a transparent wrapper. 5 figures. E.G.S.

PACKAGING—OPENERS

EISENHARDT, RAYMOND, and GORDON, JEROME J. Container and draw cord combination. U. S. patent 2,584,336. Filed Dec. 13, 1949. Issued Feb. 5, 1952. 2 claims. [Cl. 229-51]

A cardboard container is provided with a nylon draw cord by means of which the top of the carton can be slit along three edges and opened. 7 figures. E.G.S.

PAPER—COATED

FRANCIS, CARLETON S., JR. Coated sheet material and process for making the same. U. S. patent 2,537,126. Filed Aug. 14, 1948. Issued Jan. 9, 1951. 10 claims. Assigned to American Viscose Corporation. [Cl. 154-106]

A process is described for the manufacture of coated fibrous sheet material (e.g., from cotton, wood pulp, regenerated cellulose, or the like) in which a depressed design may be formed, which will retain the design permanently, and which is relatively free of coating material throughout the body of the fibrous sheet. The product is suitable for use in upholstery, handbags, wall coverings, table coverings, apparel, luggage, and the like. 3 figures. E.G.S.

LANIGAN, FRANCIS W. Process of leveling and drying coatings with steam. U. S. patent 2,583,220. Filed Dec. 24, 1948. Issued Jan. 22, 1952. 4 claims. Assigned to Dewey and Almy Chemical Company. [Cl. 117-64]

A process for leveling heat- and pressure-spreadable coatings on fabricated webs of paper or fabric comprises the steps of moving a coated web continuously at a rate of 100-250 ft./min. past a transverse slit orifice located adjacent to the web, and directing against the coating material on the web a continuous blast of steam from the orifice at 21-80 p.s.i., superheated before expansion by 40-230°F. so that when it is expanded against the web, it becomes dry, supersaturated steam with no more than 4.5% indicated free moisture content. The steam is delivered at a velocity of 1000-3000 ft./sec. and at a rate of 100-290 lb./hr./0.072 sq. in. of slit orifice area. 3 figures. E.G.S.

NILES, GEORGE E. Process for producing mineral-coated paper.

U. S. patent 2,583,274. Filed April 30, 1947. Issued Jan. 22, 1952. 6 claims. Assigned to Monsanto Chemical Company. [Cl. 117-155]

A process for the production of a mineral-coated printing paper of high brightness and excellent ink receptivity comprises the steps of coating at least one side of a paper body stock with an aqueous slurry which consists essentially of water, a mineral pigment, and 4-30% by weight (based on the pigment) of a binder consisting of a copolymer of 33-65% of styrene and 35-67% of ethyl acrylate; and then drying and calendering the coated stock. E.G.S.

PAPER—COATED (WRINKLE COATING)

WALTON, RICHARD K. Oil-free wrinkle finish coating. U. S. patent 2,585,197. Filed April 14, 1950. Issued Feb. 12, 1952. 6 claims. Assigned to Union Carbide and Carbon Corporation. [Cl. 260-44]

A resinous, wrinkle-finish composition is the condensation product of 1.2-2.0 moles of formaldehyde and the reaction product of one mole of phenol with 0.5-1.0 mole of a secondary amine selected from the group consisting of diallylamine and dialkylamines (e.g., dimethyl- or diethylamine) wherein each alkyl group has one to eight carbon atoms. E.G.S.

PAPER SPECIALTIES

ALBINI-COLOMBO, CARLO. Process for printing textile fabrics. U. S. patent 2,583,286. Filed June 4, 1948. Issued Jan. 22, 1952. 7 claims. [Cl. 154-97.5]

A process for the color printing of textiles comprises the steps of applying a film of an insoluble starch size to one side of a paper sheet (basis weight 60-70 g./sq. m.), which is partially sized with resin; coating the film with a layer of fatty substance (e.g., a mixture of mucilaginous and semifluid oleic resins and zinc stearate); color printing the design on the treated side of the sheet; supporting the printed sheet on a strip of relatively strong paper; superimposing a fabric on the paper sheets; and subjecting the fabric and strip to heat and pressure simultaneously. 2 figures. E.G.S.

BANKS, MILLARD S. Soap package. Canadian patent 480,156. Filed Nov. 13, 1947. Issued Jan. 15, 1952. 13 claims.

A single-use soap package consists of a quantity of soap flakes wrapped in a paper tube (e.g., cigarette paper, Japanese tissue, or light toilet paper). This is the same as U. S. patent 2,539,395; *cf.* B.I.P.C. 21 : 520. 4 figures. E.G.S.

BYERS, RALPH J., and CHRISTIAN, MOSS B. Paper covered wood product and method of making same. Canadian patent 480,666. Filed Feb. 20, 1948. Issued Jan. 29, 1952. 8 claims. Assigned to Chicago Mill and Lumber Company.

A paper-covered wood veneer is manufactured from green, undried wood, wet, expanded paper (e.g., unsized kraft), and a water-resistant, alkalinized soybean glue. This corresponds to U. S. patent 2,545,603; *cf.* B.I.P.C. 21 : 599. 4 figures. E.G.S.

CANNO, LEONARD E. Method of making carry bags. U. S. patent 2,586,514. Filed Dec. 30, 1948. Issued Feb. 19, 1952. 4 claims. Assigned to Equitable Paper Bag Co., Inc. [Cl. 93-35]

A method is described for the manufacture of paper carry bags from a continuous web of glued paper tubing. Means are included for separating the tubing along transverse perforations at predetermined intervals. 2 figures. E.G.S.

CRANE, CARLTON L. Aqueous emulsions of cellulose esters. U. S. patent 2,563,708. Filed Feb. 27, 1948. Issued Aug. 7, 1951. 13 claims. Assigned to Eastman Kodak Company. [Cl. 106-170]

A water-repellent composition for cloth, paper, leather, or the like comprises cellulose triacetate emulsified in a liquid mass which consists essentially of an organic solvent for the cellulose ester, water, and cellulose di-*n*-butylamine sulfate. E.G.S.

CURTIS, WALTER C., JR. Method of sealing the ends of duplex insulated webs in roll form and product thereof. Canadian patent 480,121. Filed Dec. 16, 1948. Issued Jan. 8, 1952. 8 claims. Assigned to Shellmar Products Corporation.

A roll of duplex sheet material (e.g., Pliofilm or saran) is bulk sealed along its edges and, upon unwinding, can be cut into tubes and formed into containers. An interleaving paper web is interposed between the plies of the transparent web prior to the heat-sealing operation, to prevent adjacent layers from sticking or fusing to each other. 5 figures. E.G.S.

ELSER, WILLIAM F., and RICHARD, KENNETH L. Method and apparatus for bonding closure materials. U. S. patent 2,584,002. Filed Nov. 28, 1950. Issued Jan. 29, 1952. 11 claims. Assigned to Owens-Illinois Glass Company. [Cl. 154-37]

A method and apparatus are described by means of which a wax-coated paper closure-liner material is heated, brought into contact with a thin membrane facing sheet (e.g., glassine, cellophane, saran film, or metal foil), and bonded thereto at a number of points. 11 figures. E.G.S.

FELT, CLARENCE E., and BORCHARDT, LESTER F. Case liner. Canadian patent 480,705. Filed April 30, 1945. Issued Jan. 29, 1952. 11 claims. Assigned to General Mills, Inc.

A packing case for cereal cartons is provided with a water-vapor barrier, paraffin-coated paper liner. 2 figures. E.G.S.

FRANCIS, CARLETON S., JR. Process of coating and article for use therein. Canadian patent 480,631. Filed May 3, 1946. Issued Jan. 29, 1952. 5 claims. Assigned to American Viscose Corporation.

A flexible transfer sheet comprises a paper backing which carries a permanent coating of phenol-formaldehyde resin and a temporary coating of vinyl resin over the permanent coating. This corresponds to U. S. patent 2,556,078; *cf.* B.I.P.C. 21: 899. 4 figures. E.G.S.

KINDSETH, HAROLD V. Bag construction. Canadian patent 480,833. Filed Sept. 16, 1949. Issued Feb. 5, 1952. 1 claim. Assigned to Bemis Bro. Bag Co.

A multi-ply cellophane bag embodies paper or metal foil reinforcing strips which are interposed between the cellophane plies. 6 figures. E.G.S.

MILLIDGE, BRYDONE D. Paper bags and handles therefor. Canadian patent 480,834. Filed Sept. 22, 1948. Issued Feb. 5, 1952. 4 claims. Assigned to Bonar & Bemis Ltd.

A paper shopping bag incorporates a paper carrying handle which is reinforced with a length of fibrous cord, twine, or the like. 7 figures. E.G.S.

SOUTHWICK, CHARLES A., JR. Container with fused reinforced seam. U. S. patent 2,584,633. Filed Nov. 9, 1945. Issued Feb. 5, 1952. 4 claims. Assigned to Shellmar Products Corporation. [Cl. 206-46]

The fused seams of a polyethylene bag are bound and reinforced with a paper or fabric tape, the fibers of which are embedded in the plastic mass of the seam construction. 6 figures. E.G.S.

SOUTHWICK, CHARLES A., JR. Method of making containers. U. S. patent 2,584,632. Filed Nov. 9, 1945. Issued Feb. 5, 1952. 1 claim. Assigned to Shellmar Products Corporation. [Cl. 154-116]

A duplex paper-polyethylene bag is provided with a filling valve which can be heat sealed after the pouch has been filled. The bag is especially suitable for the packaging of liquids. 8 figures. E.G.S.

WARE, RICHARD N., JR., and CANNON, REGINALD. Method of and apparatus for making paper covered veneer. Canadian patent 480,665. Filed Dec. 8, 1947. Issued Jan. 29, 1952. 3 claims. Assigned to Chicago Mill and Lumber Company.

A process of making a paper-covered wood veneer involves the reeling of freshly peeled veneer sheets into rolls, the steaming of the rolls, the unreeling of the hot, steamed rolls into elongated, flat ribbons of veneer, and the covering of the ribbons with adhesive-coated, stretched paper which is bonded to the wood to hold it in an expanded condition as it is dried. This is the same as U. S. patent 2,521,544; *cf.* B.I.P.C. 21: 142. 9 figures. E.G.S.

WILKINS, GEORGE C. Wrapping strip. U. S. patent 2,584,074. Filed Aug. 19, 1949. Issued Jan. 29, 1952. 1 claim. [Cl. 206-56; changed to 206-58]

A gummed-paper sealing tape is scored in a zigzag or dovetailed pattern along a line which is symmetrical with the center line of the tape. The tape may be separated along the score line and used in the wrapping of cylindrical packages, or left intact and employed in the same manner as conventional gummed tape. 4 figures. E.G.S.

PIGMENTS

CRAIG, WILLIAM L. Production of pigmented cellulosic pulp. U. S. patent 2,583,548. Filed March 17, 1948. Issued Jan. 29, 1952. 3 claims. Assigned to R. T. Vanderbilt Company, Inc. [Cl. 106-204]

A pigmented cellulosic pulp is prepared by adding dry paper pulp to a commercial calcium chloride waste liquor (10% calcium chloride) to form a pulp suspension, beating the pulp to effect the swelling, hydration, and gelatinization of the fibers, and precipitating an insoluble calcium carbonate

pigment in, on, and around the modified fibers by the addition of sodium carbonate. This is similar to Canadian patent 468,720; *cf.* B.I.P.C. 21: 217. E.G.S.

PULP STONES

NORDSTROM, YNGVE H. Pulpstone joint material. Canadian patent 480,110. Filed Aug. 24, 1948. Issued Jan. 8, 1952. 4 claims. Assigned to Norton Company.

A pulpstone joint filler comprises a sandwich of outer layers of a butadiene-acrylonitrile copolymer and an inner layer of vulcanized natural rubber; the inner layer is rendered porous by the evolution of gas during the vulcanization process. This is the same as U. S. patent 2,446,513; *cf.* B.I.P.C. 19: 68. 3 figures. E.G.S.

RAMIE

JENSEN, SØREN J. F. Process of degumming and bleaching ramie. U. S. patent 2,530,244. Filed Nov. 21, 1946. Issued Nov. 14, 1950. 4 claims. [Cl. 92-17; changed to 8-138]

A process for the degumming and bleaching of ramie comprises the steps of treating China grass in a 0.2% alum solution for several hours; boiling the soaked fiber in a caustic solution and allowing it to stand for several hours; boiling the resultant material in 0.2% hydrochloric acid; boiling the acid-treated fibers in a 1% sodium perborate solution for several hours; boiling the ramie in a 0.5% caustic soda solution for several hours; boiling in 0.15% hydrochloric acid; boiling in a 0.5% sodium perborate solution; and washing and drying. E.G.S.

SETUP BOXES

BAGUR, PIERRE E. Miniature cotton bale receptacle. U. S. patent 2,584,414. Filed March 2, 1950. Issued Feb. 5, 1952. 2 claims. [Cl. 229-8]

A cardboard candy box is designed to simulate a miniature cotton bale. 3 figures. E.G.S.

SHIPPING CONTAINERS

BELSINGER, JACK R. Fiber board container. Canadian patent 480,638. Filed March 14, 1949. Issued Jan. 29, 1952. 1 claim. Assigned to Belsinger, Inc.

This is the same as U. S. patent 2,569,035; *cf.* B.I.P.C. 22: 227. E.G.S.

BELSINGER, SAMUEL P. Heavy duty fiber container. Canadian patent 480,639. Filed March 14, 1949. Issued Jan. 29, 1952. 3 claims. Assigned to Belsinger, Inc.

This corresponds to U. S. patent 2,578,774; *cf.* B.I.P.C. 22: 469. E.G.S.

BELSINGER, SAMUEL P. Heavy duty fiber container. Canadian patent 480,640. Filed May 27, 1950. Issued Jan. 29, 1952. 3 claims. Assigned to Belsinger, Inc.

This is the same as U. S. patent 2,578,776; *cf.* B.I.P.C. 22: 469-70. E.G.S.

CRANE, WALTON B. Shipping, storage and display cartons. Canadian patent 480,624. Filed May 14, 1948. Issued Jan. 29, 1952. 8 claims. Assigned to Alpak.

A carton which is adapted for the packaging of heavy, breakable jars (e.g., cosmetics, pharmaceuticals, shaving cream, and the like) can be divided into upper and lower tiers by the utilization of a die-cut divider without interference with the functions of longitudinal and transverse partitions. This is the same as U. S. patent 2,450,941; *cf.* B.I.P.C. 19: 220-1. 13 figures. E.G.S.

STOREY, ALVIN B. Carton. U. S. patent 2,583,672. Filed April 7, 1949. Issued Jan. 29, 1952. 1 claim. Assigned to Celanese Corporation of America. [Cl. 229-40]

A corrugated board shipping carton for conical spools of yarn incorporates vertically aligned apertures in its top and bottom walls, which are designed to engage the free ends of the yarn package supports. 7 figures. E.G.S.

STOREY, ALVIN B. Carton. U. S. patent 2,583,673. Filed May 26, 1949. Issued Jan. 29, 1952. 1 claim. Assigned to Celanese Corporation of America. [Cl. 229-40]

A corrugated or cardboard shipping carton is adapted for the packaging of conical yarn packages. This is a continuation of U. S. patent 2,583,672; see above. 7 figures. E.G.S.

SULFITE WASTE LIQUOR

FARBER, EDUARD. Treatment of wood waste. Canadian patent 480,937. Filed Jan. 22, 1951. Issued Feb. 5, 1952. 13 claims. Assigned to Timber Engineering Company.

This corresponds to U. S. patent 2,574,027; *cf.* B.I.P.C. 22: 305. E.G.S.

TALL OIL

GREENLEE, SYLVAN O. Tall oil ester. Canadian patent 480,456. Filed Nov. 14, 1947. Issued Jan. 22, 1952. 4 claims. Assigned to Devoe & Raynolds Company, Inc.

Synthetic drying compositions are prepared by the esterification of high-molecular weight, polymeric, polyether, polyhydric alcohols with tall oil acids. This is the same as U. S. patent 2,493,486; *cf.* B.I.P.C. 20: 463. E.G.S.

McCOY, PAUL E. Quick-breaking bituminous emulsion. U. S. patent 2,585,336. Filed June 14, 1948. Issued Feb. 12, 1952. 6 claims. Assigned to American Bitumuls & Asphalt Company. [Cl. 252-311.5]

A quick-breaking, oil-in-water-type emulsion consists essentially of water, asphalt, a small amount of sodium dichromate sufficient to improve the adhesion of the asphalt for hydrophilic aggregate, and an effective amount (i.e., up to about 10%) of sulfonated tall oil for the emulsification of the asphalt. The emulsion is useful as an adhesive, binding material, and a coating composition, particularly in road construction. E.G.S.

NOWAK, MILTON, and FISCHER, ALFRED. Process of preparing oil-soluble metal soaps. U. S. patent 2,584,041. Filed July 6, 1949. Issued Jan. 29, 1952. 17 claims. Assigned to Nuodex Products Co., Inc. [Cl. 260-414]

A hydrous, two-phase, metal-acid fusion process for the preparation of oil-soluble metal soaps comprises the mixture of at least one powdered metal (e.g., cobalt, copper, iron, or manganese), at least one organic acid (e.g., naphthenic, 2-ethylhexoic, or tall oil acid) capable of forming oil-soluble, heavy-metal soaps, and a quantity of water to produce a reaction mass, and the subsequent heating of the mass under agitation in the presence of air to a temperature above 100°F., under such conditions that the water is maintained in the liquid phase throughout the reaction. E.G.S.

RICHTER, RICHARD, and MISKEL, JOHN J. Rubberoid tall oil derivative polymers. Canadian patent 479,950. Filed Oct. 27, 1944. Issued Jan. 1, 1952. 12 claims. Assigned to National Oil Products Company.

Acetylated tall oils can be condensed under the influence of heat and in the presence of acidic esterification catalysts (e.g., aluminum chloride or *p*-toluenesulfonic acid) to yield polymeric products which have semielastic rubberlike properties. This corresponds to U. S. patent 2,451,173; *cf.* B.I.P.C. 19: 222. E.G.S.

ROSENCRANSE, CHARLES R. Asphalt emulsion for treatment of coal and method of preparing the same. U. S. reissue patent 23,462. Filed Aug. 17, 1950. Issued Feb. 12, 1952. 6 claims. Assigned one half to Joe F. Klaner, Jr. [Cl. 106-277; changed to 252-311.5]

An asphaltic coal coating composition consists of a colloidal emulsion of a blown asphalt which is fed into a colloidal mill after preheating to 300°F., simultaneously with an approximately equal volume of an aqueous dispersion at a temperature of about 180°, which contains 95.04% water, 3.0% of petroleum hydrocarbon-insoluble pinewood resin, 1.4% of bentonite clay, 0.10% of tall oil, and 0.46% of caustic soda; it is then rapidly cooled to about 150°. E.G.S.

SIMMERS, CHARLES D. Liquid binder. U. S. patent 2,584,300. Filed Dec. 9, 1948. Issued Feb. 5, 1952. 2 claims. Assigned to Johns-Manville Corporation. [Cl. 106-123]

A liquid binder which is suitable for use in the manufacture of mineral wool batts contains, as an example, the following ingredients: 55% of pentaerythritol esters of tall oil; 30% of linseed oil; 15% of pentaerythritol ester of rosin; 0.6% of managanese naphthenate; and 0.6% of iron naphthenate (all percentages by weight). E.G.S.

WILSON, ROBERT A. Method for producing alkylene oxide condensation products. U. S. patents 2,586,767. Filed Jan. 31, 1948. Issued Feb. 19, 1952. 12 claims. Assigned to Monsanto Chemical Company. [Cl. 260-97.5]

A process for the production of detergents, surface-active materials, and assistants for use in the textile and related industries comprises the steps of continuously introducing ethylene oxide into a reaction zone; spraying into

the zone finely divided tall oil, which reacts with a portion of the ethylene oxide; cooling; and continuously recycling and spraying the resulting products into the zone until 1.4 parts by weight of ethylene oxide have reacted with one part by weight of tall oil. The reaction is carried out at 160-180°C., and the cooling is sufficient to maintain the reaction temperature. 1 figure. E.G.S.

TEXTILE INDUSTRY AND FABRICS—FIREPROOFING

BURNELL, MAURICE R., and LYNN, JOHN E. Treatment of flammable materials to impart flame resistance thereto, compositions therefor, and products thereof. U. S. patent 2,582,961. Filed Sept. 17, 1949. Issued Jan. 22, 1952. 15 claims. Assigned to American Cyanamid Company. [Cl. 117-136]

Textile materials (e.g., wool or cotton) are rendered flame resistant by impregnation with the product of heat reaction *in situ* of a mixture containing the following initial ingredients: 5-10 parts of polymethylolmelamine, 25 parts of monomethyloldicyandiamide, and an amount of phosphoric acid corresponding to 10-15 parts of 85% phosphoric acid. E.G.S.

FORDEMWALT, FREDERICK. Oil-in-water type emulsion for flameproofing fabrics. Canadian patent 480,049. Filed March 6, 1946. Issued Jan. 8, 1952. 8 claims. Assigned to American Cyanamid Company.

A method is described for the production of a stable, heterogeneous, oil-in-water-type emulsion which is adapted for the simultaneous deposition on fabrics of flame-resisting, coloring, and binding materials. This is the same as U. S. patent 2,536,978; *cf.* B.I.P.C. 21: 445. E.G.S.

VARTANIAN, RICHARD D. Flame resistant and mildew resistant composition for cellulose fibers and fabrics. Canadian patent 480,048. Filed March 6, 1946. Issued Jan. 8, 1952. 10 claims. Assigned to American Cyanamid Company.

A stable, heterogeneous, oil-in-water-type emulsion is adapted for the simultaneous deposition on fabrics of mildewproofing, flame-resisting, afterglow-preventing, coloring, and binding materials from an aqueous medium. This is the same as U. S. patent 2,536,988; *cf.* B.I.P.C. 21:445-6. E.G.S.

VANILLIN

PEARL, IRWIN A. Recovery of vanillic acid. U. S. patent 2,431,419. Filed May 17, 1944. Issued Nov. 25, 1947. 2 claims. Assigned to Sulphite Products Corporation. [Cl. 260-525] Treatment of lignin material. Canadian patent 480,757. Filed Feb. 10, 1950. Issued Jan. 29, 1952. 2 claims. Assigned to Sulphite Products Corporation.

A method for the purification of a vanillic acid-containing acid fraction obtained by the degradation of a lignin substance (e.g., acid or alkaline process waste liquor) comprises the removal of impurities by precipitation with neutral lead acetate, filtration, treatment of the filtrate with hydrogen sulfide, removal of the resulting lead sulfide precipitate from the filtrate, and recovery of vanillic acid from the filtrate. E.G.S.

Book Reviews

BRAUNS, FRIEDRICH EMIL. The chemistry of lignin. New York, Academic Press Inc., 1951. 808 p.

The ever-increasing yearly output of scientific and technical papers as well as patents dealing with the chemistry and utilization of lignin demonstrates the wide interest in this second largest component of wood. It also illustrates that the elucidation of this complicated natural compound is far from completed and requires considerable further work. The only previously available textbook dealing exclusively with lignin chemistry was published in 1926 by Walter Fuchs (Verlag von Julius Springer, Berlin). This book obviously is out of date and there has been a long felt need for an up-to-date book on lignin chemistry. This need has now been fulfilled by the comprehensive book just published under the authorship of Dr. F. E. Brauns, Research Associate of The Institute of Paper Chemistry. There are few who would be qualified to write a comprehensive book on lignin chemistry today. Dr. Brauns is eminently suited for this task. He has been engaged in research on lignin chemistry for about 25 years, has the patience so necessary in this difficult field of chemistry, and has an objective critical attitude toward new and old contributions. The book is divided into 25 chapters, logically arranged for the different phases of lignin chemistry. Each chapter is followed by a very extensive list of references, and many of the chapters have a conclusion wherein the author discusses the validity of the published data in light of his own extensive experience. Perhaps the most serious criticism of the book is that, in dealing with all published scientific literature on lignin chemistry, it is almost too comprehensive—that is, a considerable amount of the material could have been omitted without reducing its usefulness to those who wish to become acquainted with the factual developments in lignin chemistry. This is particularly true for many of the earlier publications which now are largely of historical value, and to methods for preparation and analysis which are obviously wrong or outdated. On the other hand, the author has largely refrained from including information from the patent literature. This leaves out considerable material bearing on lignin chemistry but not appearing in scientific or technical journals. Publications in recent years on the oxidation of lignin compounds with silver oxide resulting in several well-defined aromatic compounds are among the few the reviewer could find which have escaped the author. In the introduction the author explains that he wishes to bring order into the confusing lignin nomenclature. The book presents an excellent opportunity to accomplish much needed logical standardization. Brauns uses the term "protolignin" for the lignin as it exists in wood and he clearly defines the variously isolated lignins by the wood species and agents with which it is isolated, i.e., "cuproxam beech lignin," "hydrochloric acid spruce lignin." However, he still uses alternatively the old terms "Freudenberg beech lignin," "Willstätter spruce lignin," etc. This would seem to counteract his laudable efforts to establish a rational system in lignin terminology. The above critical remarks are of minor importance, for Brauns' book presents a very valuable and welcome source of information for students of lignin chemistry and should greatly contribute to further progress in this field by making so conveniently available the results of previous investigators. It is regrettable that the quality of the printing is below par and tends to show through because of insufficient opacity of the paper.

J. RICHTER SALVESEN

PHILLIPS' Paper trade directory of the world, 1952. London, S. C. Phillips & Co., Ltd., 1952. 747 and lxviii p.

This directory is an attempt to list pulp, paper, and board mills of the world. The section for the British Isles is naturally the most complete and includes a classified list of converters and lists of paper buyers, merchants, and wholesale stationers; British paper and pulp agents and mill representatives; waste paper, rag, and paper stock merchants; British box, carton, and container makers; and paper bag makers. Unfortunately, a compilation of this kind can only be as complete and as accurate as the information furnished by the mills; whereas the data for many mills of the United States seem to be fairly complete (including the products manufactured), it is noted that Ecusta Paper Corporation has only one line (the address), without any indication of the types of paper which they produce. The classified directory contains 304 entries, with the names of the mills producing each item. The volume contains a list of watermarks of British firms and illustrations of Scandinavian pulp marks. It also reproduces British Standard 710 (British standard for paper and boards), paper trade customs, and gives a glossary of trade terms in English, French, German, Spanish, Italian, and Swedish.

C. J. WEST

AUTHOR INDEX TO BOOKS

Adams, W. C. 476
Aero Research Limited 475
Alfrey, T., Jr. 476
Becker, A. E., ed. 476
Birkner & Co. 476
Bohrer, J. J. 476
Burris, R. H. 475
Casey, J. P. 476
Friend, H., ed. 475
Keim, K. 476
Leontief, W. W. 476
Mark, H. 476
Marks, L. S., ed. 475
Montessus de Ballore, H. de 475
Neuman, J. 475
Phillips, S. C., & Co. 476
Society of Chemical Industry 475
Standard Oil Company of New Jersey 476
Stauffer, J. F. 475
Umbreit, W. W. 475
U. S. Congress House. *Committee on Interstate and Foreign Commerce. Special Subcommittee on Newsprint and Subjects under House Resolution 116* 476

AUTHOR INDEX TO ABSTRACTS

The letter P preceding a page number indicates a patent abstract.

Abele, W. 506
Ace Art Company ..... P 543
Addison-Semmes Corporation ..... P 537
Albert, F. A. 493
Albini-Columbo, C. ..... P 548
Allen, H. G. ..... P 544
Alpak ..... P 536, P 552
American Bitumuls & Asphalt Company ..... P 552
American Can Company ..... P 539, P 543
American Chemical Society. *Division of Cellulose Chemistry. Committee on Standards and Methods of Testing. Subcommittee on Acyl Analysis* 485
American Cyanamid Company ..... P 554
The American Envelope Company .. P 546
American Paper and Pulp Association 477
American Viscose Corporation P 547, P 549
Anderson, E. S. ..... P 545
Anglo-American Council on Productivity 504
Appel, W. D. 483
Arden, F. 530
Arlov, A. P. 516
Arneson, E. L. ..... P 536
Arneson, L. E. ..... P 542
Aronovsky, S. I. 528
Arvey Corporation ..... P 536
Back, E. 511
Bagur, P. E. ..... P 551
Baigas, J. F., Jr. 529
Baisley, R. J. ..... P 545
Baker, M. W. ..... P 545
Bandura, J. ..... P 545
Banks, M. S. ..... P 548
Bankston, P. T. 489
Bartell, F. E. 490
Beachler, E. D. ..... P 544
Beeman, L. A., Jr. 512
Behrens, A. 489
Behrens, H. H. 506
Beil, F. F. ..... P 545
Beloit Iron Works ..... P 544
Belsinger, J. R. ..... P 551
Belsinger, S. P. ..... P 551
Belsinger, Inc. ..... P 551
Bemis Bro. Bag Co. ..... P 549
Bethge, P. O. 488
Bettendorf, H. J. 521
Bianchi, I. W. ..... P 546
Bianchi, I. W., Inc. ..... P 546
Bikerman, J. J. 493
Birchard, W. H. 509
Bittner, F. 498
Blom, C. 522
Bogaty, H. 483
Bonar & Bemis Ltd. ..... P 550
Borchardt, L. F. ..... P 549
Borlew, P. B. 488
Borruso, D. 518
Boxboard Containers 480, 524
Brauns, F. E. ..... 497, P 541
Breitvelt, K. B. 479
Briggs, B. T. ..... P 535
British Paper and Board Industry Research Association 522
Brookover, T. 481
Brown, J. H., Jr. ..... P 542
Brown, L. K. ..... P 539
Brown, R. W. 489
Bryde, O. 521
Bullock, W. 507
Burke, T. J. 507
Burnell, M. R. ..... P 554
Byers, R. J. ..... P 548
Caldwell, C. G. 525
Campbell, K. S. 483
The Canal National Bank of Portland ..... P 546
Canno, L. E. ..... P 548
Cannon, R. ..... P 550
Carey, W. G. 529
Case, G. R. 491
Casey, J. P. 505, 531
Celanese Corporation of America .. P 552
Centola, G. 518
Charles, E. 534
Chemical Engineering 484, 510, 511
Chêne, M. 497
Chicago Carton Company ..... P 547
Chicago Mill and Lumber Company ..... P 548, P 550
Chinai, S. N. 520
Chmielewski, C. A. ..... P 539
Christian, M. B. ..... P 548
Christman, P. J. ..... P 546
City and Guilds of London Institute 509
Clarke, J. D. ..... P 536
Clauson, K. A. 507
Collins, P. A. 502
Colomy, R. 510
Combustion Engineering-Superheater, Inc. ..... P 535
Condon, R. S. ..... P 536
Container Corporation of America .. P 537
Continental Can Co., Inc. ..... P 536
Cook, H. D. 503
Cooper, P. E. 497
Corte, H. 479
Craig, E. R. 527
Craig, W. L. ..... P 550
Crane, C. L. ..... P 549
Crane, W. B. ..... P 536, P 552
Crane, W. B., Jr. ..... P 536
Crowley, E. L. 488
Cruikshank, J. W. 533
Curtis, C. F., II ..... P 545
Curtis, W. C., Jr. ..... P 549
Curtis Companies Incorporated .... P 545
Cushman, M. 481
Daum, H. ..... P 545
Davey, E. L. ..... P 538
Davis, J. A. 531
Day, F. T. 512
Decker, C. A. ..... P 536
Deissenberg, C. 497
DeMoisy, R. G. 478
Denton, P. 492

Déribéré, M. 496, 532
Devoe & Raynolds Company, Inc. ..P 552
Dewey and Almy Chemical Co. .....P 547
Dickey, E. E. 499
Dier, M. L. .....P 540
Dobrow, M. C. 507
Donnelly, F. 495
Downs, M. L. 513
Duggan, E. W. 525
Dunphy, C. G. .....P 544
du Pont de Nemours, E. I., and Company .....P 538
Eastman Kodak Company .....P 549
Edge, S. R. H. 511
Eidlin, I. Ya. 502
Eisenhardt, R. .....P 547
Elliott, H. 495
Elmendorf, A. 521
Elser, W. F. .....P 549
Emhart Manufacturing Company ..P 544
Empire Box Corporation .....P 540
Equitable Paper Bag Co., Inc. .....P 548
Ergun, S. 530, 531
Erickson, D. R. 506
Escard, J. 480
Eskimo Pie Corporation .....P 539
Evans, J. C. W. 522
Every, D. 497
Ewaldson, W. C. .....P 542
Farber, E. .....P 552
Felt, C. E. .....P 549
Fenske, P. N. .....P 536
Fergnani, W. P. .....P 544
Fibreboard Products, Inc. 481
Filippova, N. K. 512
Filmer, R. H., Limited .....P 541
Finn, S. R. 518
Fischer, A. .....P 553
Fleming, W. M. .....P 539
Fordemwalt, F. .....P 554
Foster, J. F. 526
Foster, T. W. .....P 537
Fowler, R. M. 508
Francis, C. S., Jr. .....P 547, P 549
Frase, R. E. .....P 537
Fraser, R. K. 500
Freudenberg, K. 498
Gaubert, R. J. .....P 542
Gaylord Container Corporation ....P 541
General Corrugated Machine Company, Inc. .....P 545
General Mills, Inc. .....P 549
George, W. C. .....P 541
Gerard, G. A. .....P 540
Giertz, H. W. 486
Gilbert, C. L. .....P 537
Girardy, E. 480
Giuffria, R. 491
Glass Fibres, Inc. 496
Glover, W. T., & Company Limited P 539
Goldman, H. 520
Golovanov, N. G. 511
Gordon, J. J. .....P 547
Gran, G. 486, 488
Grant, J. N. 491
Gray, C. M. 492
Gray, V. R. 518
Green Bay Paper & Pulp Co. 524
Greenlee, S. O. .....P 552
Gregg, S. J. 489
Griffin, R. C. 531
Haarer, A. E. 525
Hafner, R. 496
Haley, A. B. .....P 545
Hamilton, G. 502
Hansen, O. 511
Hart, J. A. 517
Haward, R. N. 518
Head, F. S. H. 483
Hedlund, I. 487
Heikens, D. 520
Hendrick, W. T. S. .....P 540
Hergert, H. L. 477
Herman, L. G. 492
Hermans, P. H. 520
Hess, R. W. 533
Hewson, J. K. 526
Hill, A. C. 508
Hochmuth, F. W. .....P 535
Hopp, L. .....P 541
The Hopp Press Inc. .....P 541
Houdaille-Hershey Corporation .....P 543
Howitt, F. O. 532
Huber, A. 494
The Hubinger Company 477
Humphreys, G. C. 491
Hurter, A. T. .....P 541
Hurxthal, A. O. .....P 546
Ivers-Lee Company .....P 543
Jensen, S. J. F. .....P 551
Jiffy Manufacturing Company .....P 540
Johns-Manville Corporation ..P 545, P 553
Jones, C. L. .....P 536
Jones, M. H. .....P 536
Jones, S. F. .....P 536
Jop. 528
Kast, W. 534
Keely, C. D. .....P 545
Kelleher, D. 495
Kindseth, H. V. .....P 549
Kirby, M. J. .....P 541
Kirkpatrick, W. A. 532
Klaner, J. F., Jr. .....P 553
Klasing, A. P. .....P 541
Klein, C. G. .....P 539
Klingelhöffer, H. 504, 525
Kowal, M. H. .....P 540
Kullgren, C. 498
Kurth, E. F. 477
Kymin Osakeyhtiö-Kymmene Aktiebolag .....P 538
L. E. 513
Laabs, G. H. .....P 542
LaCoste, D. 524
LaHaise, T. F. 513
Landberge, M. J. 506
Lanigan, F. W. .....P 547
Lathrop, E. C. 503, 520
Lavery, H. H. 513
Leopold, B. 499
Lethelin Products Company, Inc. .. 504
Levkoff, D. .....P 542
Levón, M. 494
Lewis, H. F. .....P 541
Libby, C. E. 505
Liebert, E. 521
Lily-Tulip Cup Corporation .....P 542
Lindberg, B. 485
Lopez, J. A. 526
Luey, A. T. 513
Lynn, J. E. .....P 554
Lyons, J., & Company Limited ....P 540
Macaulay, D. 527
McColl, B. J. 534
McCoy, P. E. .....P 552
McIntosh, D. C. 478
MacMillan & Bloedel, Ltd. 479
Macoy, E. W. .....P 543
Mallman, E. .....P 541
Malsberger, H. J. 494
Marvin, S. .....P 542
Mayer, Oscar, & Company 532
The Mead Corporation .....P 541
Meller, A. 484
Milchin, J. .....P 537
Miller, I. C. 504
Millidge, B. D. .....P 550
Milne, J. M. 523
Minnesota and Ontario Paper Co. ...P 545
Minute, A. 519

Misiorny, A. 485
Miskel, J. J. ..... P 553
Modern Packaging 505
Monsanto Chemical Co. ....P 548, P 553
Morris Paper Mills .....P 536, P 542
Morse, R. E. 493
Moss, H. V. 493
Moyer, W. W. 482
Myers, D. M. 492
Nadelman, A. H. 533
National Oil Products Company ....P 553
National Paper Box Limited .....P 539
National Safety Council 523
Natkina, L. N. 486
Niagara Box Factory, Inc. 503
Nicolson, L. P. 503
Niles, G. E. .....P 547
Nilsson, G. 529
Nissan, A. H. 522
Noble, C. E. 527
Nordstrom, Y. H. .....P 551
Norman, C. R., Jr. .....P 540
Norton Company .....P 551
Nowak, M. .....P 553
Nulty, W. B. .....P 546
Nuodex Products Co., Inc. .....P 553
Odquist, H. T. .....P 543
Ogait, A. 530
Ohlsson, K.-E. 488
O'Keefe, G. W. .....P 546
Olin Industries, Inc. 522
Organisation for European Economic Co-operation 508
Orr, C., Jr. 489
Orr, R. S. 491
Ottersland, P. N. .....P 541
Owens-Illinois Glass Co. ....P 537, P 549
P—s 502
Packaging Parade 505
Pacsu, E. 483
Padé, P. 517
Padgett, J. W. 517
Pancirolli, F. 518
The Paper Container 482
Paper Making and Paper Selling .. 528
Paper Mill News 510
Paper Trade Journal 477
Parkin, T. N. 518
Patton, E. A. .....P 545
Pearl, I. A. .....499, P 554
Perry, F. S. .....P 537
Perry, H. J. 508
Perry, W. M. .....P 537
Pfeffer, J. .....P 545
Pocta, F. 525
Porter, E. 494
Posey, R. 490
Post Machinery Company .....P 544
Prat, J. 515
Preis, C. G. .....P 539
Procopi, J. 502
Proctor & Schwartz, Inc. .....P 547
Pulp & Paper 479, 510
Ranby, B. G. 482
Rauscher, N. L. 513
Ray, B. R. 490
Rayonier, Incorporated .....P 535
Reed, C. L. 492
Remco Food Products, Inc. 481
Richard, K. L. .....P 549
Richter, R. .....P 553
Rideout, A. E. .....P 544
Ringström, E. 487
Ritchie, J. L. 509
Robert, A. 500
Roche, J. C. .....P 547
Rochow, T. G. 523
Rock Island Millwork Company ....P 535
Rosencranse, C. R. .....P 553
Rugen, D. L. .....P 545
S & S Corrugated Paper Machinery Co., Inc. .....P 543, P 545
St. John, E. 527
Salfisberg, L. L. .....P 543
Sanborn, A. W. 514
Sandberg, R. A. .....P 543
Sandermann, W. 519
Saulquin, A. 480
Savannah Sugar Refining Corp. ...P 544
Scaturro, P. S. .....P 536
Scherer, P. C. 520
Schreiber, P. R. 506
Schuetz, C. C. .....P 540
Seely, L. E. 495
Seidl, R. J. 514
Seiler, H. 497
Selvig, J. N. .....P 542
Senger, F. 486
Sevón, J. W. .....P 538
Shcheglov, I. M. 480
Shellmar Products Corporation ....P 543, P 549, P 550
Shepard, E. L. .....P 546
Shields, A. F. .....P 543, P 545
Showalter, F. W. .....P 546
Siimes, F. E. 534
Simmers, C. D. .....P 553
Simmonds, H. J. 481
Simplex Packaging Machinery, Inc. P 542
Sivola, G. .....P 538
Sokolovskiĭ, D. S. 503
Soughton, F. O. 523
Southwick, C. A., Jr. .....P 550
Spannuth, H. T. 514
Spiller, W. S. 514
Springer, H. E. 490
Stadler, Hurter & Company .....P 541
Stafford, R. W. 523
Stamm, A. J. 485
Stephano, C. S. .....P 544
Stephano Brothers .....P 544
Stephansen, E. 480
Stevenson, L. T. 516
Stockinger, G. .....P 543
Storey, A. B. .....P 552
Stovroff, H. 533
Suffolk Farms 505
Sukhoparov, A. A. 502
Sulphite Products Corporation .....P 554
Sundman, F. V. .....P 538
Sunnberg, T. G. 511
Sykol, V. P. 529
Tarkow, H. 485
Taylor, H. W. 514
Teeple, H. O. 490
Textile Or'ganon 520
Thomson, A. G. 495
Thurmond, C. D. 526
Tierney, M. M. .....P 537
Timber Engineering Company .....P 552
Tipka, V. L. 504
Totten, A. I., Jr. 515
Tournoux, P. 515
Traynard, P. 500
Trelfa, R. T. 527
Tripp, V. W. 491
Tugman, J. L. 496
Uber, J. J. .....P 538
Underhay, G. F. 522
Union Carbide and Carbon Corp. ..P 548
United States Gypsum Company ....P 540
Unter 506
Unteutsch, W. 519
Val'shchikov, N. M. 500
Vanderbilt, R. T., Company, Inc. P 550
Van Esselstyn, S. T. 517
Vartanian, R. D. .....P 554
Voorn, H. 510
Voyutskiĭ, S. S. 512
Wadleigh, G. 501

Wagner, R. E. 483
Walker, W. C. 516
Wallace, S. .....P 539
Walton, C. L. 481
Walton, R. K. .....P 548
Ware, R. N., Jr. .....P 550
Watson, N. J. .....P 547
Watzek, P. F. 494
Webber, L. E. 495
Weidler, W. .....P 538
Weiss, W. 495
Welch, J. F. 525
Wells, D. J. 517
Werner, A. W. 501
West, C. J. 516
Western Electric Company, Inc. ...P 542
Wetzler, J. J. .....P 543
Weyerhaeuser, F. .....P 535
Wheelwright, W. B. 501
Whitley, J. E. .....P 540
Whitmore, L. E. 505
Wilke, G. 498
Wilkins, G. C. .....P 550
Williamson, M. I. .....P 538
Wilson, H. L. 482
Wilson, K. 487
Wilson, R. A. .....P 553
Wise, J. A. 532
Wultsch, F. 486
Yanka, D. 501
Yermakoff, E. A. 517
Zatti, A. 501
Zimm, B. H. 526
Zotova-Spanovskaya, N. P. 512
Zucker, D. 526

BOOK REVIEWS

Brauns, F. E. 555
Phillips, S. C., & Co. 556

The Institute of Paper Chemistry has entered into an agreement with University Microfilms, Ann Arbor, Michigan, whereby University Microfilms is authorized to provide microfilm copies of this Bulletin to subscribers. To the extent that back issues were in print at the date of execution of the agreement, microfilm copies of these back issues can also be obtained. Sales by University Microfilms of films of this Bulletin are restricted to regular subscribers to the Bulletin. The microfilm is distributed only at the end of the volume year. The film is in the form of positive microfilm, and is furnished on metal reels, suitably labeled. Inquiries concerning purchase should be directed to:

University Microfilms
313 North First Street
Ann Arbor, Michigan

LIBRARY SERVICE

The Library of The Institute of Paper Chemistry is located in the Kimberly Memorial Building. Its purpose is to serve the students and the faculty of The Institute of Paper Chemistry and the chemists and technologists of the pulp and paper industry.

To contributing members it gives the following service:

A monthly bulletin is issued, listing all new books and periodicals added to the library and containing titles and abstracts of articles published during the previous month in the field of pulp and paper chemistry and technology. The annual index carries a list of periodicals currently received.

At a reasonable cost the librarian will furnish complete reference lists on chemical and technical problems for member mills, and will procure translations, photostats, or abstracts of the articles listed. Upon request, member mills working on special problems will be kept in touch with new publications related to their work.

Reviews of new publications pertaining to the field of pulp and papermaking will be included from time to time.

The library is open daily with the exception of Sundays from 8:15-5:00 and from 7:30-9:30. Saturday it closes at 5:00 o'clock.